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# JOURNAL

OF THE



# STATISTICAL SOCIETY

OF

LONDON.

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VOL. XIV.

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LONDON:

JOHN WILLIAM PARKER, 445, WEST STRAND.

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1851.



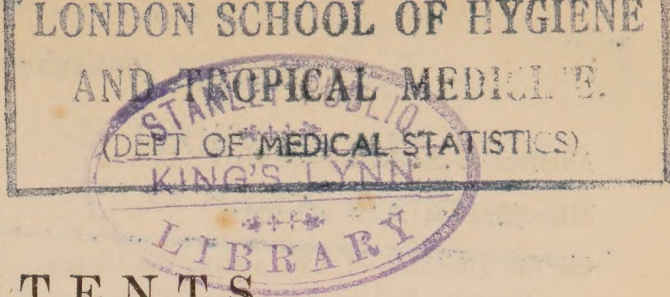
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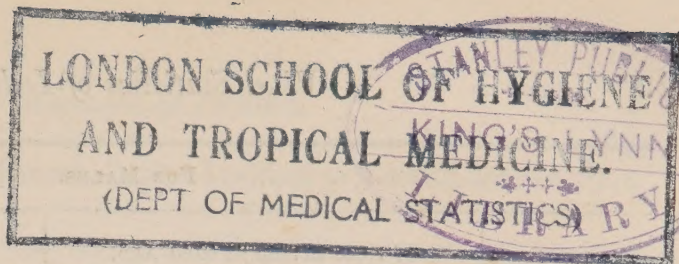
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QUARTERLY JOURNAL  
OF THE  
STATISTICAL SOCIETY OF LONDON.

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MARCH, 1851.

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*Vital Statistics of Iceland.* By P. A. SCHLEISNER, M.D., &c.\*

[Read before the Statistical Society of London, 18th November, 1849.]

IN order to compute or compare the mortality in two different countries, where the calculation cannot be founded on long periods of years, it is necessary to have regard to the character of the periods used for calculation, especially in what concerns the different frequency of epidemical diseases. The life-table computed for Denmark by Professor Fenger is founded on the period 1835-44, which was a very favourable one, and free from any important epidemic. But if we look over the annual lists of deaths for Iceland, we shall soon discover that there is not a single quinquennium during which one or more severe epidemical diseases have not prevailed. The quinquennium 1840-45 is the most favourable in that point of view; but the year 1843 is marked by an epidemic of influenza, which prevailed in the middle of the year for two months, and almost doubled the number of deaths for the whole year. I have, nevertheless, used that quinquennium for my computation; but, in doing so, I have eliminated the year 1843 out of the calculation, and have used the returns for the years 1841, 1842, 1844, and 1845, for the average number of deaths at different ages.

The average numbers of the living at the same ages have been obtained from the censuses for 1840 and 1845. My table is constructed in the same manner as Fenger's, and in computing the decrement column (the second), I have used the same formula of correction as he (*vide* "Det Kongelige Medicinsk Selskabs Skrifter," bd. 1, 1848, p. 30). The two tables can therefore be compared, and I will here give the results:—

\* Island undersøgt fra et largevidenskabeligt Synspunkt af. P. A. Schleisner, Dr. Med., Medlem, 1849. This work contains the tables in detail from which the results in the paper are deduced.



## FOR MALES.

Age.	Of 1,000 Living at each Age, the Average Yearly Numbers Dying at the same Ages were,		Of 10,000 Children Born, the Numbers who attained the end of every Age were,	
	Iceland.	Denmark.	Iceland.	Denmark.
0.....	305.3	193.9	10,000	10,000
1.....	25.9	68.7*	6,947	8,061
3.....	3.7	25.4	6,597	7,507
5.....	3.8	8.1	6,549	7,316
10.....	5.1	5.2	6,425	7,026
20.....	10.6	7.7	6,111	6,672
30.....	13.1	10.0	5,496	6,175
40.....	19.7	15.8	4,826	5,585
50.....	22.2	25.7	3,967	4,768
60.....	51.1	49.8	3,177	3,686
70.....	92.0	101.4	1,907	2,241
80.....	172.0	207.2	759	812
90.....	....	....	135	101

## FOR FEMALES.

Age.	Of 1,000 Living at each Age, the Average Yearly Numbers Dying at the same Ages were,		Of 10,000 Children Born, the Numbers who attained the end of every Age were,	
	Iceland.	Denmark.	Iceland.	Denmark.
0.....	265.5	162.8	10,000	10,000
1.....	24.2	64.5	7,435	8,372
3.....	4.2	28.1	7,084	7,832
5.....	3.2	8.3	7,024	7,612
10.....	4.3	5.9	6,912	7,301
20.....	7.5	7.3	6,628	6,884
30.....	10.0	10.5	6,155	6,396
40.....	14.0	13.2	5,569	5,756
50.....	20.9	20.1	4,841	5,044
60.....	37.8	41.5	3,932	4,124
70.....	69.6	91.9	2,694	2,722
80.....	144.0	192.0	1,343	1,085
90.....	....	....	317	158

\* For the ages 1—3 and 3—5 the quotients in Fenger's table are computed in another way than in mine, and may be compared for these ages with the double of my quotients (vide l. c.).

The table for Iceland has, as above mentioned, been constructed in such a way, that the Icelandic population can be compared under the same conditions as the Danish. The table will therefore show the peculiarities attributable to the Icelanders' constitution and manner of living. It will be seen that the same laws of mortality prevail in Iceland as in Denmark, except that the mortality, even under the same favourable conditions, is much higher in Iceland. This observation, however, applies especially to the first year of life; in other



words, the highest degree of mortality in Iceland is a little earlier than in Denmark.

It will further be seen, that the mortality of females in comparison with that of males is still more favourable in Iceland than in Denmark; the reason of which I have explained in my book. The probable lifetime at birth is, in Denmark, for males, 47 years, for females, 50; in Iceland, for males, 37 years, for females, 48. But this is not the true expression for the mortality of the Icelandic population, inasmuch as epidemics have been put out of the calculation.

In Denmark, severe epidemic diseases occur very seldom; but in Iceland, they are of very frequent occurrence. In order to find the true term for the Icelandic mortality, it will therefore be necessary to take a long series of years, taking no notice of the epidemics. But here again we encounter the inconvenience, that for the earlier years the census is taken so rarely, and the annual deaths are given so little in detail, as to render the construction of a correct life-table impossible. There is, however, one circumstance stated in the Icelandic returns which makes it possible to calculate the true mortality of the Icelandic population. The lists contain, besides the whole yearly number of births and deaths, the yearly number of those who have been confirmed. Now, in Iceland, the age of confirmation (this act being there, as in Denmark, a compulsory one) has always been very constant, between 14 and 15 years.

I have availed myself of this circumstance. Starting from the year 1750, I have summed up the number of births in every quinquennial period, and have computed how many of them in every fourteen years following the quinquennium have been confirmed. In that way I have found, that, during the last century, out of 1,000 children born, 548·3, on an average, have been confirmed, *i. e.*, attained the end of 14 years; for this century, 583·6; and for the whole series of years, 569·5. This gives an enormous difference in comparison with the Danish population; for while at present, in Denmark, of 1,000 males born, 569 attain the end of 38 years; and of 1,000 females, 569 attain that of 41; in Iceland, the same number of both sexes attain only the end of 14 years.

The cause of this extraordinary mortality amongst the Icelanders may, as already suggested, be found in the frequency of epidemic diseases, of which the severity may be traced to the bad sanitary conditions of the country. As no country in Europe is afflicted in such a degree by epidemics, I shall explain this matter a little more fully, referring for further details to my book (p. 41, ff.) The Icelandic epidemics are of two kinds, partly native, that is to say, originating in the country itself, and partly foreign, that is to say, from time to time imported into the country by ships. To the first class belong typhus and influenza, which are the most frequent.

Typhus fever prevails almost every year; it does not differ from common typhus; but, besides this, there is another typhus-like fever, occasioned by famine, which has almost always followed the large volcanic eruptions, or the years of distress that from time to time have attacked Iceland.

Influenza shows in Iceland two different characters. It is either benignant, having no great influence upon the mortality, and in that

form prevailing every year; or it is more malignant, complicated with pleuritis, and thus greatly influencing the mortality. In this latter form, it has this century raged, every ninth year, with some approach to regularity.

Among the native epidemics may still be reckoned dysentery, cynanche parotideæ, scurvy, croup, and endemic cholera. Icterus has also sometimes assumed an epidemic character, having, however, no connexion with the morbus hydatidosus hepatis, which of all sporadic diseases is the most frequent in Iceland. The varioloid diseases have also been sometimes transferred as an epidemic from cows to men.

To the foreign epidemics belong small-pox, measles, scarlatina, and hooping cough, which, at intervals of twenty years and upwards, are introduced by merchant-ships to this isolated island. During the intervals, they are quite unknown. When any of these epidemics are brought to the island, the whole population is attacked, as with one stroke; thus, for instance, when the measles was brought to Iceland, three years since, that disease, which for sixty years previously had been quite unknown there, attacked the whole population, and all ages, from the child to the old man. The measles, which in Europe is a benignant disease, raged there with such fury, that the number of deaths for that year was more than doubled. In Iceland, where the mountainous ground, intercepted by numerous rivers, makes the communication very difficult, where there are no public roads at all, and where, instead of towns (with the exception of three small ones), the dwellings lie scattered at large distances, it is very easy to find out the way in which epidemic diseases propagate themselves. All the Icelandic physicians agree in stating that these last-mentioned epidemics, as they are brought to the island by contagion, are also always, and exclusively, propagated by contagion. In the Færoe Islands, which consist of a great number of scattered islets, the physicians have arrived at the same conclusion.

It is well known that the Icelanders have always been distinguished by their great interest in literary, especially in historical, studies. From an early period, they have kept yearly records, in which all remarkable accidents, both within and without the country, have been noticed; the greater part of these is still unpublished. By studying these records, I have found that, from 1306–1846, 134 years out of the 540 are mentioned as being more or less epidemic years. The epidemics that prevailed in those years were as follows:—

Foreign epidemics—Small-pox; this raged nineteen times, often for several successive years; three times in the 14th century, once in the 15th, five times in the 16th, five times in the 17th, four times in the 18th, and once in the present century. The severity of this epidemic had abated even before the introduction of vaccination. The year 1707 was the most disastrous, when the small-pox is stated to have swept away 18,000 out of a population of 52,000 inhabitants. The measles have prevailed three times only; scarlatina four times; and hooping cough four times. The plague has raged twice; first in the years 1402–3, having been brought to the country by a Norwegian ship, when two-thirds of the inhabitants perished; and again in 1493–95, when it was introduced by English ships.

In the year 1528, and in 1551, an epidemic is mentioned, called in



Iceland "*Sárasótt*." This expression is used by some Icelandic writers as synonymous with syphilis; and other circumstances lead me to believe that that was really the disease. If so, it is the more remarkable, inasmuch as syphilis, as well as gonorrhoea, do not at present exist in Iceland. Single cases are sometimes brought to the island by merchant ships, but they have been soon cured, and the diseases have never been propagated.

Of the native epidemics, the most frequent have been:—Typhus, mentioned as a severe epidemic, fifteen times; influenza, fifteen times; dysentery, five times; diseases occasioned by famine, eight times.

It may be supposed, that for the early years especially, those epidemics only have been mentioned which have had a remarkable influence on the mortality.

It was of the greatest interest to me to find out some way of determining the loss of men which these epidemics occasioned. As the yearly lists of deaths do not contain the causes of death, I could not make use of them for that purpose; I therefore tried to arrive at the result through the statistical method. By means of the annals and the yearly reports of the Icelandic physicians, I first determined which years should be considered as epidemic and which not, starting from 1750, as the period since which the reports and the yearly lists are most correct. The yearly lists contain the whole number of births and deaths, but it is only for the last ten years that the different ages are detailed. The census was taken in 1750, 1769, and 1801, and from 1835, every fifth year. I now proceeded in the following manner (the same by which the Table II. in my book has been constructed\*): I first tried to find out the yearly number of inhabitants. I started from the census of 1769, and by summing up the excess of the births over the deaths, or the reverse, I computed back to 1750, and forward to 1801. As in Iceland the immigration and emigration are almost nothing, it will not appear strange that the number calculated in this way for 1801 differed very little from the real number ascertained by the census. From 1801, I computed, in the same manner, forward to 1846. The yearly number of inhabitants thus found is put in the fourth column of the table. From the mortality of eight out of the last ten years, during which *no epidemical disease prevailed* amongst the children, I then computed the ratio of mortality in the first year of life, and found it to be 300 of 1,000 children born. I convinced myself that this ratio for the *healthy* (not epidemic) years was nearly the same in the last century, by recurring to the original ministerial books in some of the most populous districts. Having thus determined for the healthy years the ratio of mortality in the first year of life, I computed how many, according to this ratio—which I will call the Normal one—out of the number born each year, have died in the first year of life (seventh column). By subtracting these from the whole number of deaths, I then found how many died above the first year (eighth column). But I must remark, that, for the *epidemic* years, the number in this column also includes those who have died of epidemic diseases in the first year itself. From this column, and the fourth column, I then computed, for all the *healthy* years, how many above

\* The years in the table marked \* are the epidemic years.

the first year had died out of 100 of every year's population above one year (using for that purpose the population of every preceding year). These ratios for all the healthy years are put in the ninth column. From all these ratios I then computed, separately for every century, an average ratio, which I will call the Normal ratio, for the mortality above the first year. I then computed, for all the *epidemic* years, how many would have died, according to this Normal quotient, out of every year's population above one year (tenth column). By subtracting the last numbers from those in the eighth column, for the *epidemical* years, I find the number of those who have perished by epidemics.

Every one who is acquainted with statistical matters will observe, that I, in this manner, have avoided the error so commonly committed by authors who have been obliged to recur to lists of deaths only. Yet it may be granted that my calculated result is not quite correct, as it cannot be supposed that the proportion of the number of the living at the different ages has been the same for the whole series of years. Hence it may result that the numbers for the single years are somewhat incorrect, while for the whole period, in so large a sum of numbers, the error may be considered as disappearing. For some of the single years of the century preceding 1835, I find, in the lists of deaths collected by the clergymen, that the causes of death, as well as the number of those who have died of epidemics, have been noticed; and on comparing my calculated numbers with these, I found them to agree more than I had expected.

Now the result which I have arrived at in that way is the following. The Normal mean ratio of mortality for the population above one year has been for the last century 1.2404 per cent., for this, 1.1164 per cent. The whole number of those who have perished of epidemical diseases from 1750 to 1846, is 47,622, which is an enormous sum for a population that has never exceeded 57,000 individuals. Of this number, 25,938 have died in the last century, and 21,684 in this. Of the whole number, 3,036 have died of small-pox, 2,026 of measles, 1,468 of scarlatina, and 1,932 of hooping cough, or a total of 8,462 who have perished by epidemics imported by foreign ships. Of those who have died by native epidemics, 16,441 have perished by diseases arising out of famine (whereof 6,036 in the three years succeeding the enormous volcanic eruption of the "Skaptafgeldsgökull," in the year 1783), 9,067 of influenza, and 4,867 of typhus.

If we compare the increase of the Icelandic population with that of the Danish, we shall find, that while the Danish population, from 1801 to 1845, increased 43.85 per cent., the Icelandic, for the same period, increased only 24.14 per cent. During the last century, from 1703 to 1801, the Icelandic population even decreased 6.42 per cent. During the period 1801-45, we find, in the Icelandic lists, that there have been thirteen years in which the number of deaths exceeded that of the births; while in Denmark, for the same series of years, there is only one year, 1831, in which that was the case. The epidemic in question was a very severe outbreak of intermittent fever.

It is commonly believed in Iceland that this slow increase of population may be considered as a blessing, and that the country cannot support a larger population. In order to show to what extent this



opinion is well founded, I constructed the following table, making use, for the purpose, of the annual economical lists collected by the Icelandic functionaries:—

Years.	Number of Inhabitants.	Increase or Decrease per Cent.	Number of Cows, Bullocks, and Calves.	Increase or Decrease per Cent.	Number of Sheep, Wethers, and Lambs.	Increase or Decrease per Cent.	Number of Fishing Boats.	Increase or Decrease per Cent.
1703....	50,444	....	38,760	....	278,992	....	....	....
1770....	46,839	— 7·1	31,179	—19·5	378,677	+ 35·7	1,869	....
1783....	48,663	+ 3·9	21,457	—31·2	232,731	—38·5	....	....
1804....	46,349	— 4·8	20,325	— 5·3	218,818	— 6·0	2,163	+15·7
1823....	50,090	+ 8·1	25,364	+24·8	402,508	+84·0	2,175	+ 0·6
1833....	56,656	+13·1	27,862	+ 9·8	568,607	+41·3	2,457	+13·0
1843....	57,180	+ 0·9	23,753	—14·7	606,536	+ 6·7	2,911	+18·5
Increase or decrease for the whole series of years, 1703—1843.....		+13·4 per cent.	....	—38·7 per cent.	....	+117·4 per cent.	....	+55·7 per cent.

It will hence be seen, that while the population in the whole series has increased 13·4 per cent. only, the number of sheep, which is the real capital wealth of the country, has increased 117·4 per cent., and the number of fishing boats (indicating the increase of the fishery itself), 55·7 per cent. As a high degree of mortality may always be considered as a great misfortune to a country, so I have convinced myself that the reason why the fishery in Iceland does not give so much profit as it might do, is because the boats cannot be manned with a sufficient number of adult males. For the same reason, the Icelandic industry is worth nothing, though the country abounds in materials which might be advantageously worked into articles of manufacture.

I shall still furnish some further details to illustrate the statistics of Iceland. I believe that there is no country in Europe where the number of those who perish every year by drowning is so high as in Iceland. This results from fishing being the main occupation of the people. As the greater part of those who perish by drowning in Iceland are males, between 15 and 60 years of age, I have considered that circumstance in constructing the following table, in which I have made the comparison between Denmark, Iceland, and the Færoe Islands:—

	Iceland.	Færoe Islands.	Denmark.
Total number drowned from 1835-44 .....	530	41	2,503
Average yearly number drowned .....	53	4	250
Number of inhabitants on an average of the census 1835, 40, and 41 .....	57,229	7,314	1,284,817
Drowned out of 100,000 living individuals ....	92·6	56·1	19·5
Drowned out of 100,000 males living, be- tween 15 and 60 years .....	351·6	196·9	67·3

It will hence be seen that the proportion of the drowned is more than five times as large in Iceland as in Denmark. If we compare the number of drowned in Iceland with the total number of deaths, it will be found that the proportion is 25·4 per cent. out of the total yearly number of males dying between 15 and 60 years of age.

Iceland is divided into seventeen different districts. I have continued the computation for all those districts, and the number thus found indicates in the most correct manner where the best fishing places are to be found, and their yearly profit. I am inclined to believe that the rates which the fishing-places are obliged to pay yearly to the Government, according to the greater or less profit of the fishery, are not paid with such an accuracy as the rate which the sea yearly enforces. I have also compared the proportion of other violent deaths (excepting suicides) to the population in Iceland, Färoe Islands, and Denmark, and found it to be, out of 100,000 living individuals, 22·9, 32·8, and 13·5, respectively. Here the proportion is highest in the Färoe Islands. The reason for this is, that, next to the fishery, bird-catching is here the first employment of the people; but this occupation is very dangerous, as the birds build their nests on the high craggy rocks, of which these small islands consist.

Almost all the foreigners who have travelled in Iceland have mentioned the extraordinary fecundity of the nation as something remarkable. It is noticed that marriages with twenty children and upwards occur frequently. But from such single facts, a general rule for the fertility of the nation cannot be deduced. I have tried to find it out. The fertility of a nation is commonly indicated by the proportion of the children born to the whole population. Dr. Kayser, Professor of Statistics at the University of Copenhagen, has made a correction in that test. Instead of fixing the births in proportion to the whole population, he fixes them in proportion to the whole number of women at the fertile age (which, for the northern countries, is between twenty and fifty years). In the above-mentioned treatise (*"Det Kongelige Medicinske Selskabs Skrifter,"* bd. 1, 1848, p. 172 ff.), he explains that matter more in detail. He especially mentions the error so commonly committed in indicating the morality of a town or country by the proportion of the illegitimate births to the legitimate. The last number is never constant, but depends upon the fluctuation of the marriages; when the marriages increase, the number of illegitimate births will be proportionately reduced; and when the marriages decrease, the number will be raised, though perhaps the real relation is quite otherwise. To compute that proportion, it will, according to Dr. Kayser, be necessary to compare the number of illegitimate births with the number of *unmarried* women living at the fertile age. In that manner he has computed the proportion at different periods, for the towns in Denmark, with a result very different from that found out by the method commonly used. But it may still be granted, that even with that correction, the term is not quite correct. It will be seen from the Swedish lists of births and deaths, which contain, besides the number of children born, also the ages of the lying-in women, that the fertility is different at different ages, being, for instance, in Sweden, highest between thirty and thirty-five years. Now it may very well happen that two nations, even if they contain



the same number of fertile women, may contain a different fraction of them at the most fertile age, and also that the ratios of fertility—if I may so express myself—may differ at the various ages. It will therefore be necessary to construct the tables for the fertility in the same manner as for the mortality, unless we follow the method indicated by Moser, who recurs to the marriages and life-tables.

In Denmark, as well as in Iceland, the lists of births are still not so detailed as in Sweden; for this reason, I restrict myself to the method indicated by Dr. Kayser. I shall make the comparison between the results obtained by Dr. Kayser for Denmark, and mine for Iceland. Kayser's computation is founded on the series of years partly from 1830-44, partly from 1827-44; mine is founded on the ten years 1838-47.

	Average Yearly Number of Births.	Average Number of Women between 20 and 50 Years.	Proportion of Births to 100 Women between 20 and 50 Years.
Denmark .....	39,878	262,871	15·2 per cent.
Iceland .....	2,054	12,117	16·9 ,,

	Average Yearly Number of Legitimate Births.	Average Number of Married Women between 20 and 50 Years.	Proportion of Legiti- mate Births to 100 Married Women between 20 and 50 Years.
Denmark .....	35,666	150,985	23·6 per cent.
Iceland .....	1,774	6,287	28·2 ,,

	Average Yearly Number of Illegitimate Births.	Average Number of Unmarried Women between 20 and 50 Years.	Proportion of Illegiti- mate Births to 100 Unmarried Women between 20 and 50 Years.
Denmark .....	4,213	111,886	3·77 per cent.
Iceland .....	280	5,830	4·8 ,,

	Average Yearly Number of Boys born.	Average Yearly Number of Girls born.	Proportion of Boys to 100 Girls born.
Denmark .....	20,227	19,140	105·7 per cent.
Iceland .....	1,056	997	106·0 ,,

	Proportion of Twins to 100 of the whole Number of Births.	Proportion of Triplets to 100 of the whole Number of Births.
Denmark .....	1·23 per cent.	0·015 per cent.
Iceland .....	1·43 ,,	0·095 ,,

It will hence be seen that the fertility of the Icelandic women, both married, and especially unmarried, is a great deal greater than that of the Danish, but that the population, in point of fertility, is not so well composed as the Danish. In Denmark, the number of married women out of the whole number of fertile women is 57·4 per cent.; while in Iceland it is only 51·9 per cent. It will be seen from the above table, that the number of male births exceeds that of female births in a higher degree in Iceland than in Denmark. I have already shown that the probable lifetime of the Icelandic females in relation to the males is still better than in Denmark; hence it will not excite wonder to find, that, in the Icelandic population, the proportion of the males to the females is as 1,000 to 1,120; while the proportion in Denmark is as 1,000 to 1,023. The proportion of still-born children is more favourable in Iceland than in Denmark, as will be seen by the following table:—

	Average Yearly Number of all Births.	Average Yearly Number of Still-Born Children.	Proportion per Cent.
Denmark .....	40,536	1,767	4·4 per cent.
Iceland .....	2,054	67	3·3 „

	Average Yearly Number of Male Births.	Average Yearly Number of Still-Born Males.	Proportion per Cent.
Denmark .....	20,833	1,019	4·9 per cent.
Iceland .....	1,057	38	3·6 „

	Average Yearly Number of all Girls born.	Average Yearly Number of Still-Born Girls.	Proportion per Cent.
Denmark .....	19,703	748	3·8 per cent.
Iceland .....	997	29	2·9 „

It is also the case in Iceland, as elsewhere, that this proportion is less favourable in the illegitimate births than in the legitimate.

As Iceland, in several respects, affords so many peculiarities, it would perhaps be interesting to mention the results of the nosographical part of my treatise, also founded on statistical researches; but as Dr. Latham has promised to make an abstract of the whole treatise in the “British and Foreign Medical Review,” I will omit it here.



*Of the Quantity of Gold and Silver supposed to have passed from America to Europe, from the discovery of the former Country to the present time. By J. T. DANSON, Esq., Barrister-at-Law.*

[Read before the Statistical Society of London, 16th December, 1850.]

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PART FIRST.—THE PERIOD FROM 1492 TO THE END OF 1803.

I. *Introductory.*

THE highest European authority on this subject is well known to be the "Political Essay on the Kingdom of New Spain," published by Baron Humboldt, early in the present century. In that work are found collected all the accounts and other data then available relating to the gold and silver received from America down to the end of the year 1803. The ability of the writer, even then distinguished, his acquaintance with the art of mining, and his having enjoyed every facility for learning the truth that a close personal examination of the mining districts of the Spanish colonies could afford him, combined to give to his statements and estimates the highest authority; and accordingly they have displaced those of every previous writer on the same subject.

It has since become usual to accept the ultimate figures put forward by this great writer, without examining how they were obtained. In venturing to adopt a different course, I trust it will not be considered that I respect Baron Humboldt less; but rather that I respect more the integrity of the science we are associated to promote.

II.—*Baron Humboldt's Account of the Production of Gold and Silver in America, with observations thereon.*

1. *Spanish Colonies generally.*

After describing the mining districts of New Spain, and also, though less particularly, those of the other Spanish colonies, Baron

Humboldt offers a collective estimate of the entire quantity of gold and silver raised in America, and sent to Europe, as follows. I translate the entire account, with a few prefatory observations, as it stands in the original\*, only dividing it into sections, so as to bring the details more clearly to view:—

A.—“To avoid as much as possible, in these researches, causes of error which are but too numerous, I shall follow a course different from that adopted by the writers above mentioned. I shall state, first, the quantity of gold and silver which, according to the records of the Mint and of the Royal Treasury, we know to have been extracted from the mines of Mexico and Potosi; I shall add, from the historical knowledge which I acquired as to the mining operations of Mexico, the amount furnished by Peru, Buenos Ayres, and New Granada; and I shall distinguish what has been registered from what has been smuggled. Instead of estimating, as has hitherto been done, the total extent of the contraband trade at a third or a fourth of the metals registered, I shall make partial estimates, according to the position of each colony, and its relations with the neighbouring countries. When we would judge of the greatness of a distance we cannot precisely measure, we reduce the chances of error if we divide the whole extent into several parts, and compare each of these with objects of a known greatness.”

**B.—QUANTITY OF GOLD AND SILVER REGISTERED AS RAISED FROM THE MINES OF AMERICA FROM THE YEAR 1492 TO 1803.**

**SPANISH COLONIES.**

	Piastres.
The kingdom of New Spain has supplied to the Mint of Mexico, from 1690 to 1803, according to the registers .....	1,353,452,000
The mines of Tasco, of Zultepec, of Pachuca, and of Tlapujahua, were almost the only mines which were worked immediately after the destruction of the city of Tenochtitlan in 1521, and from that date down to 1548. As the quantity of gold and silver coined at the commencement of the eighteenth century did not exceed 5,000,000 piastres per annum, I compute, from the conquest of Hernan Cortez to 1548, the total produce of Mexico to have been	40,500,000
In 1548 began the working of the mines of Zacatecas; in 1558 that of the mines of Guanajuato; and nearly at the same time the process of amalgamation invented by Medina was brought into use. We may reckon, from 1548 to 1600 at least 2,000,000, and from 1600 to 1690 3,000,000 per annum.....	374,000,000
	<hr/> 1,767,952,000

Here the estimate refers to both gold and silver; but only to what was raised from the mines of New Spain, after the conquest of that country.

It would appear from these figures that the mines of New Spain (now Mexico) yielded an annual average value, of both metals, in the first twenty-seven years, from 1521 to 1548, of 1,500,000 piastres†. That in the next fifty-two years, from 1549 to 1600, the average was 2,000,000; and that in the succeeding ninety years, from 1601 to 1690, it was 3,000,000; showing a progressive increase throughout. So far, however, all is estimate. The registers used by Humboldt went back only to 1690, and at that date the annual yield was set

\* 2nd Edition, 8vo., 3 vols., Paris, 1827.

† The piastre, or dollar, of Spain, here referred to, was nearly equivalent to the present American dollar. Since 1772 the Spanish dollar has been coined by two standards: one giving each piece 377·04 grains of pure silver, the other 374·14 grains. The American dollar, since 1792, has been coined to contain 371·25 grains of pure silver.—*Doursther*, 325-27.



down at from 4,000,000 to 5,000,000 of piastres. In the next 114 years, 1690 to 1803, the annual average exceeds 11,000,000; and there was an increase, with little variation, throughout the whole of this period, as is apparent from the following series of decennial averages:—

Decennial Average.		Decennial Average.	
Piastres.		Piastres.	
1690 to 1699 .....	4,387,133	1750 to 1759 .....	12,575,009
1700 „ 1709 .....	5,173,103	1760 „ 1769 .....	11,282,886
1710 „ 1719 .....	6,574,702	1770 „ 1779 .....	16,518,172
1720 „ 1729 .....	8,415,322	1780 „ 1789 .....	19,350,455
1730 „ 1739 .....	9,052,973	1790 „ 1799 .....	23,108,021
1740 „ 1749 .....	11,185,504		
Average of the last four years—1800 to 1803.....		19,304,795.	

## 2 Peru.

	Piastres.
C.—1. “The mines of Potosi have supplied, since their discovery in 1545 down to the year 1803, $1,095\frac{1}{2}$ millions piastres, or 128,882,000 marcs; that is to say, from 1545 to 1556 nearly ...	127,500,000
From 1559 to 1789, according to the registers of the Treasury.....	788,258,500
Add, on account of the value of the peso de minos, from 1556 to 1600 .....	134,000,000
Produce of Potosi from 1789 to 1803 .....	46,000,000
2. The mines of Pasco or Yauricocha, discovered in 1630, have yielded, down to 1803, nearly 300,000,000 piastres, or 35,300,000 marcs; that is to say, from 1630 to 1792 at 200,000 marcs of silver per annum ...	274,400,000
From 1792 to 1801, according to the registers .....	21,501,600
Produce of the Cerro de Yauricocha, from 1801 to 1803 .....	3,400,000
3. The mines of Gualgayoc, discovered in 1771, yielded, down to 1773, nearly 170,000 marcs of silver per annum .....	4,300,000
From the year 1774 to 1802, from the mines of Gualgayoc, Guamachuco, and Conchuco .....	185,339,900
Add, for the year 1803.....	504,000
4. I value the produce of the mines of Huantajaya, Porco, and other less important Peruvian mines, from the 16th century to 1803, at 150,000 or 200,000 marcs of silver per annum .....	350,000,000
	<hr/>
	1,935,204,000”

This section (C) includes all the mines of Peru, which, as well as those of New Spain, appear to have been visited by Humboldt. But the estimate has no reference to any *gold* raised in Peru during the same period, this being brought in afterwards as a separate item.

The Peruvian mines are here distributed into four groups: the most ancient and the richest of which, that of Potosi, appears to have yielded, in silver, in the eleven years from 1545 to 1556, an annual average of about 11,590,000 piastres. This is a very large sum; and it does not rest upon any registers or other official accounts, but is deduced from an examination of several contemporary descriptions; all of which agree in attributing to these mines an extraordinary fertility during the first years of their working. Those who desire to examine the critical grounds on which M. Humboldt bases this part of his account, will find the details in pages 360-67 of the third volume of the “Essay on New Spain.” Considering the extreme paucity of direct evidence, they appear to me to be sufficient. From 1556 to 1789, there are official registers of the produce of the mines of Potosi;

and these give, for the 233 years, an annual average yield of 3,958,000 piastres. For the last fourteen years, 1789 to 1803, the average is only 3,280,000 piastres. Here, then, we have evidence of a progressive decrease of production—the reverse of what seems to have occurred in Mexico.

The mines of Pasco, forming the second Peruvian group, are set down, for the first 162 years, 1630 to 1792, at an annual average of about 1,693,000 piastres. This estimate is deduced from the quantity brought to the local mint for coinage in the same period.

For the nine years from 1792 to 1801, there were registers purporting to give the actual yield of the mines; and the average per annum appears, thence, to have been 2,389,000 piastres.

What is set down for the two years 1802-3 is evidently estimated, and gives an annual average of only 1,700,000 piastres. But for this estimate we can now substitute something more definite. In a despatch, dated 20th July, 1836, from the British Consul at Lima, an account was furnished to our Government of the quantity of silver reduced to bars at the different smelting-houses of Peru for a series of years, including those here in question. The quantity so reduced at the smelting-house of Pasco, in the two years 1802-3, was stated to be 547,098 marcs of Castille, which, at  $8\frac{1}{2}$  piastres per marc, gives an annual average of 2,325,000 piastres. It would appear, then, that Humboldt's estimate for these two years is considerably under the truth; and that for the item of 3,400,000 piastres in the above account, we may properly substitute 4,700,000: being an addition of 1,300,000.

The third Peruvian group, including the mines of Gualgayoc, Guamachuco, and Conchuco, discovered in 1771, was visited and minutely inspected by M. Humboldt in 1802. Yet, if I am not much mistaken, this part of the account is seriously erroneous. It will be seen that the first item states the produce of these mines, from 1771 (when they were first worked) to 1773, at 4,300,000 piastres. If the period referred to includes three years, the annual average would be about 1,433,000 piastres; if only two years, it would be 2,150,000 piastres. Now, at page 354 of the same volume (III.), M. Humboldt states, that as to these years, he was unable to obtain any account, but that they were undoubtedly the most abundant of all. The passage is, in the original, as follows:—

“ Je n'ai pas pu me procurer le produit du Cerro de Gualgayoc, depuis la découverte de ces mines en 1771, jusqu'en 1774. *Ces premières années ont été sans doute les plus abondantes de toutes; mais l'argent étant envoyé, à cette époque, à Lima, les archives de Truxillo n'ont pu fournir aucun renseignement à cet égard.* ”

This, however, is not consistent with the next item, where we find the produce of the twenty-nine years 1773 to 1802 set down at upwards of 185,000,000 of piastres, giving an annual average of 6,390,000, or three times as much as the years just before declared to have been the most abundant of all. Fortunately, in the same volume, we find an explanation. At page 353 [I quote the second French edition], there is a detailed account of the produce of these mines during each of the twenty-nine years. The total appears to be 2,180,457 marcs, which, at  $8\frac{1}{2}$  piastres to the marc, is equal to 18,533,884 piastres only, or just one-tenth of the amount set down in



the account before us. The only mode of reconciling the different statements is to assume, what is never very improbable in the formation of accounts of this kind, that 185,000,000 have been set down, by mistake, for 18,500,000; whence it becomes necessary to make a deduction of 166,806,000 piastres from the general total—reducing the annual average for the twenty-nine years to 639,000 piastres.

It will be observed that the third and last item as to these mines, for the year 1803, nearly coincides with the second as thus amended, the annual produce being there estimated at 504,000 piastres.

The fourth group of Peruvian mines includes all those not previously enumerated; and the produce of these appears to have been estimated with but little assistance from records of any description. It is not stated what length of time, exactly, the estimate is intended to cover; but the gross sum set down (350,000,000 piastres) would allow for an annual average of 1,500,000 piastres for a period of 220 years, or from 1583 to 1803; and this, in the absence of any other evidence, may be deemed sufficiently supported by the authority of the writer.

### 3. Other Spanish Mining Countries.

Piastres.

D.—“Choco was peopled in 1539; the province of Antioquia, inhabited by cannibals, was conquered in 1541. The alluvial mines of Sonora and Chili have only been worked of late. If we allow 12,000 marcs of gold for the total produce of the Spanish colonies, not comprised in the kingdom of New Spain, we may add..... 332,000,000

Gold and silver of the Spanish colonies registered from 1492 to 1803.... 4,035,156,000”

This section (D) relates to all the gold raised in the Spanish colonies, other than New Spain, down to 1803; and will probably be deemed less satisfactory than any that have preceded it. Nothing definite is said of the date at which the working of any of the districts alluded to commenced, nor is any reason given for assuming 12,000 marcs (weight) of gold as the annual average, rather than any other sum. When, however, it is remembered that nearly all that is peculiarly valuable in these accounts rests upon the acknowledged ability of Baron Humboldt to form such estimates better than any other man, we can scarcely, in the total absence of more positive evidence, raise an objection on this score. If the relation, in value, of gold to silver, be taken as 15 to 1 for the whole time, the sum set down would, at 12,000 marcs a-year, cover a period of about 195 years; and so fix the starting point for the assumed average at about 1608; which quite agrees with what seems probable.

### 4. Portuguese American Colonies; Raynal's Statement.

PORTUGUESE COLONIES.

Piastres.

E.—“Raynal supposes, for the first sixty years, a production double that of the present time. He admits, according to the registers of the fleets, that from the discovery of the mines of Brazil down to 1755 there has been sent to Europe gold to the value of..... 480,000,000  
From 1756 to 1803, reckoning only an annual production of 32,000 marcs ..... 204,544,000

Gold and silver of the Portuguese colonies, registered from the discovery of Brazil to 1803..... 684,544,000”

This section of the account (E) has an evil distinction: it can hardly be said to rest in any degree upon the authority of Baron Humboldt. It will be borne in mind that he is writing upon New Spain only; and though he occasionally gives particular attention to the other Spanish colonies, he gives very little to those of Portugal, and, when speaking of them, advances nothing as founded on his own knowledge. Here he quotes Raynal as his sole authority; and it should not be unnoticed that he has previously, in the same work, when observing upon Raynal's loose and inaccurate estimates of the produce of silver in New Spain, evinced very little respect for his ability as a statist.

The passage referred to by way of authority is in Raynal's work on the East and West Indies, vol. iv., p. 497\*; and it is important to observe that it does not, as might be expected, occur as part of any formal statement or estimate of the produce of the mines of Brazil, but comes in the midst of a declamatory attack upon the English, as monopolists of the commerce of Portugal.

I extract the whole of what Raynal says:—

“The fleets destined for the Brazils were the sole property of the English. The riches they brought back belonged to them. They would not even suffer them to pass through the hands of the Portuguese, and only borrowed or purchased their name, because they could not do without it. These strangers disappeared as soon as they had acquired the fortune they intended, and left that nation impoverished and exhausted, at whose expense they had enriched themselves. It is demonstrable from the registers of the fleets that in the space of sixty years, that is, from the discovery of the mines to the year 1756, 2,400,000,000 livres worth of gold had been brought away from Brazil, and yet, in this latter period, all the specie in Portugal amounted to no more than 15,000,000 or 20,000,000, and at that time the nation owed 100,000,000 or more†.”

The acknowledged source of this part of the account may therefore fairly induce a suspicion that it is unworthy of trust. The force of Raynal's rhetorical accusation of our countrymen is made partly dependent upon the quantity of gold they had contrived to intercept on its way into Portugal; and the phrase “it is demonstrable from the registers of the fleets” affords, in the absence of any such demonstration, but weak evidence that their offence is not exaggerated. Yet, as Baron Humboldt has thought fit to adopt this estimate, we may reasonably assume that, suspicious as it is, there was no better available, and that its substantial accuracy did not to him seem very improbable; nor can I discover that any additional or more positive evidence has yet come to light touching the gold brought to Europe from America, exclusive of New Spain, before the middle of the 18th century. Whether any such evidence may be fairly deduced from the apparent effect on the European market of the American

\* “A Philosophical and Political History of the Settlements and Trade of the Europeans in the East and West Indies.” I quote the English translation of 1783.

† Taking the livre at 10*d.* sterling, which is a little above its true value, the 2,400,000,000 of livres here referred to would be equivalent to 100,000,000*l.*—the amount of specie in Portugal (apparently both gold and silver) would appear, according to the same passage, to have varied from 625,000*l.* to 833,000*l.*, and the debt of that country to have been rather more than 4,000,000*l.* sterling.



supply during that period, is a question that belongs to a subsequent stage of this inquiry.

As to the period included in the second item of this section (E), from 1756 to 1803, some more definite information is afforded in a memoir published in a German periodical (*la Revue Trimestrielle*), about twelve years ago, by Baron Humboldt himself. He there states, as ascertained facts, that the produce of the most fruitful gold region of Brazil (the *Minas Geraes*), paying the duty of one-fifth to the Crown, oscillated, in the period from 1752 to 1761, between 6,400 and 8,000 kilogrammes\* per annum; that from 1785 to 1794, it averaged only 3,300 kilogrammes; from 1810 to 1817, fell to a mean of 1,600 kilogrammes; and in 1822, according to Scheffer, was only 350 kilogrammes; that it afterwards rose, under the exertions of some English companies; but that no accounts had been obtained since 1822. If, on the basis thus furnished, we assume that this part of Brazil, alone, yielded, from 1757 to 1770, an average of 7,000 kilogrammes; from 1771 to 1794, one of 4,000 kilogrammes; and from 1795 to 1803, only 2,500 kilogrammes

$$14 \times 7 = 98,000$$

$$24 \times 4 = 96,000$$

$$9 \times 2\frac{1}{2} = 22,500$$

---


$$47 \quad 216,500$$

per annum; we shall have a total of 216,500 kilogrammes for the forty-seven years from 1756 to 1803. The marc of Castile being equivalent to .23 of a kilogramme, this gives 941,304 marcs (rather more than 8,000,000 piastres), or about 20,000

marcs a-year, on an average, for the most fertile gold region of Brazil only; and seems, therefore, to support the

first estimate of 32,000 marcs for all the Portuguese colonies during the same period.

But even if we accept Raynal's authority, as sanctioned by Baron Humboldt, down to 1756, and assume that from 1756 to 1803 the average yield of the mines was 32,000 marcs a-year, we must still regard this section as defective. It will have been observed that Raynal's statement concerns—not the quantity of gold *raised in Brazil* within a given period, but—the quantity *sent thence, by the regular fleets*, to Portugal. In this respect, therefore, the item taken by Humboldt from Raynal is inconsistent, in point of form, with the rest of the account—which is not of the quantity sent to Europe, but of the whole quantity obtained from the mines. If we assume that even so much as nine-tenths of the whole quantity raised and brought within official cognizance reached Europe in these fleets down to 1756, leaving only the remaining tenth to represent the quantity sent elsewhere than to Portugal, lost in transit, and retained in the country, we must still add one-ninth part of the sum stated by Raynal to bring the item into formal agreement with the account of which it is here made to form a part. This one-ninth part would be about 53,000,000 piastres.

\* Valuing the Portuguese *arroba* at 14.656 kilogrammes.

5. The Contraband Trade in Gold and Silver.

F.—GOLD AND SILVER, NOT REGISTERED, RAISED FROM THE MINES OF THE NEW CONTINENT FROM 1492 TO 1803.

A.—SPANISH COLONIES.		Piastres.
I reckon for New Spain, where the furtive extraction has been very considerable, down to the middle of the 18th century, one-seventh		260,000,000
For Potosi, one-fourth of the total produce, on account of the enormous contraband at the commencement .....		274,000,000
Pasco, Gualgayoc, and the rest of Peru, whence the silver went by the Amazons river, through Brazil .....		200,000,000
For the gold of Chili, New Granada, and the kingdom of Buenos Ayres: .....		82,000,000

B.—PORTUGUESE COLONIES.		
For the gold of Brazil .....		171,000,000
Gold and silver not registered, from 1492 to 1803 .....		987,000,000

This last section (F) rests entirely upon the opinion of Baron Humboldt. It assumes that, on a general average, about *one-sixth* of all the gold and silver raised from the American mines, from the European discovery down to 1803, escaped registration, or otherwise passed into the market without being noticed or allowed for by any of the authorities previously relied upon. The figures, as they stand, may be taken to represent the apparent deficiency of these records, as they appeared to a good judge, at the beginning of the present century. And, so regarded, they tend strongly to shake one's confidence in the value of the entire statement. If it be probable that one-sixth was smuggled, who shall say that the proportion did not, in fact, amount to one-fourth, or one-third, or even to a larger proportion? Here, however, speculation is at fault. Baron Humboldt's estimate of the contraband must pass, because there is no evidence either to confirm, or to impeach its accuracy.

Two alterations, however, are necessary in this section (F), as consequent on changes in previous parts of the account. In the third item, relating to the mines of Pasco, Gualgayoc, &c., the contraband is measured by the registered produce, and the latter, as I have shown, (*ante* p. 14,) is erroneously stated. According to section C, Humboldt's estimate of the total registered produce of these mines was 839,445,000 piastres. It has been seen that 1,300,000 piastres must be added for the mines of Pasco, as their produce is stated in a Consul's return, dated 1836, and is only estimated by Humboldt. And the error in the statement as to the mines of Gualgayoc, &c., requires a deduction of 166,806,000 piastres. These amendments

166,806,000	839,445,000	reduce the registered produce of these mines to 673,939,000 piastres; or by about one-fifth. A corresponding deduction from the estimated contraband will reduce that by about 40,000,000 piastres.
1,300,000	165,506,000	
<hr/>	<hr/>	
165,506,000	673,939,000	

A similar amendment, but by way of *addition*, to the estimated contraband in Brazil, before 1756, (see the last paragraph on p. 17,) will increase this part of the account by 14,000,000 piastres.

I must also observe that about the same proportion is allowed for



the contraband on the gold as on the silver of Peru; an equality scarcely consistent with the fact that gold offers both the stronger temptation and the greater facility to furtive appropriation in every shape; while there is no reason whatever for supposing that the gold washings of Brazil were better guarded than the silver mines of Peru, but rather the contrary.

The following is the recapitulation given at the close of Baron Humboldt's account:—

### 6. Summary of Quantities produced in America.

#### RECAPITULATION.

#### VALUE OF THE GOLD AND SILVER RAISED FROM THE MINES OF AMERICA FROM 1492 TO 1803.

		Piastres.
Registered .....	{ From Spanish colonies .....	4,035,156,000
	{ From Portuguese colonies .....	684,544,000
Not Registered	{ From Spanish colonies .....	816,000,000
	{ From Portuguese colonies .....	171,000,000
Total .....		5,706,700,000

The amendments to be made in this summary, for reasons already given, are as follow:—

	Piastres.
Total, as above.....	5,706,700,000
Additions.—On account of the mines of Pasco (Section C.) .....	1,300,000
On account of the gold from Brazil before 1756 (Section E.) .....	53,000,000
For probable deficiency of the estimate of contraband with reference to the last item.....	14,000,000
	5,775,000,000
Deductions.—On account of the mines of Gualgayoc, &c. (Section C.) .....	166,806,000
For probable excess of estimate of con- traband produce of Peruvian mines....	40,000,000
	206,806,000
Grand total .....	5,568,194,000

Or, more in detail, the amended statement will stand thus:—

	Registered. Piastres.	Contraband. Piastres.
From New Spain— <i>Gold and Silver</i> .....	1,767,952,000	260,000,000
From Peru— <i>Silver</i> , viz., from		
Potosi.....	1,095,758,500	
Pasco .....	300,601,600	
Gualgayoc, &c. ....	23,337,900	
Huantajaya, &c. ....	350,000,000	
	1,769,698,000	434,000,000
From the Spanish colonies besides New Spain—		
Gold .....	332,000,000	82,000,000
From Brazil— <i>Gold</i> .....	737,544,000	185,000,000
Total Registered.....	4,607,194,000	961,000,000
Total Contraband .....	961,000,000	
Grand Total.....	5,568,194,000	

This reduces the total of Baron Humboldt by 138,506,000 piastres, which is a little more than 2 per cent. upon his total. It will be remembered, however, that very nearly the whole of this reduction is made upon evidence furnished by his own work.

So far the gold and silver are stated separately only as to the countries apart from New Spain. But, fortunately, even this is stated; though only by inference. For (at p. 421, vol. iii., Black's translation,) Baron Humboldt values the total quantity of gold, in the mass at 1,348,500,000 piastres. And as 855,544,000 piastres had been previously set down for the Portuguese colonies, and 414,000,000 for the Spanish colonies other than New Spain, it follows that the share of the latter, in the gold, by Humboldt's estimate, was about 79,000,000 piastres. Whence it follows, allowing for the corrections already made, that the two metals may be distributed thus:—

<i>Gold.</i>	Piastres.
From New Spain.....	79,000,000
„ other Spanish colonies .....	414,000,000
„ Portuguese colonies .....	922,544,000
	<hr/>
	1,415,544,000
	<hr/>
Or (exchange at 4s. 3d.) .....	£300,803,100

<i>Silver.</i>	Piastres.
From New Spain.....	1,948,952,000
„ other Spanish colonies .....	2,203,698,000
	<hr/>
	4,152,650,000
	<hr/>

Or ..... £884,350,635  
 Total sterling ..... £1,185,153,725

### 7. *Quantities of Gold and Silver received in Europe from America.*

The above is the quantity of each metal which, by the estimate here made on the basis furnished by Baron Humboldt, was raised from the American mines between the European discovery of that country and the end of 1803. Before we arrive at the quantity brought to Europe there are yet several steps to be taken.

The first importations consisted of gold not included in this estimate. Humboldt affirms (in the Memoir of 1838, referred to on p. 17,) that before the discovery of the mines of Tasco, America yielded only gold. These mines were discovered in 1522. Whence it follows that gold only could have been brought to Europe for the first thirty years after the discovery of the new country. A great part of the imports of this period must have consisted of gold previously raised from the soil, and in use among the natives, and taken from them by the Spaniards. Baron Humboldt, after examining and comparing various contemporary accounts, arrives at the conclusion that the quantity of gold thus obtained by the Spaniards, without resort to the mines, was equal to 186,000 marcs of Castille, or about 25,000,000 piastres.

Then we have to allow for the quantity of gold and silver retained in America, in coin and in various other forms. This is estimated by Baron Humboldt, by a method sanctioned by the previous use of Adam



Smith and Necker (having reference to the population, taxation, and commercial activity of the country) as having been, in 1833, about 153,000,000 of piastres.

Further, we have to allow for the exportation of the precious metals from America to other countries than Europe. This is estimated by Humboldt, down to 1803, at an annual average of 600,000 piastres, or 133,000,000 in all. But it should not pass unnoticed that, in proceeding to this conclusion, he balances two unknown quantities against each other, without attempting to measure either; for he assumes that the silver carried by American slave-dealers to the coast of Africa bore the same aggregate value as the gold dust brought from Africa to Europe during the same period. And this exchange of American silver for African gold—even assuming the balance of value to have been as exact as Humboldt supposes—of course changes, by so much, the proportion of the two metals reaching Europe: a point of considerable importance in every inquiry touching this subject.

The account of gold and silver brought to Europe would, on the basis thus afforded by Humboldt, stand as follows:—

	Piastres.
Gold found by the Spaniards among the natives, and brought to Europe in the first instance.....	25,000,000
Gold and silver raised from the American mines between 1492 and 1803, as above estimated .....	5,568,194,000
Deduct the quantity of both metals supposed to be remaining in America in 1803 .....	153,000,000
And the quantity supposed to have been sent elsewhere than to Europe .....	133,000,000
	<hr/> 286,000,000
	<hr/> 5,282,194,000
Total supposed to have been brought to Europe from 1492 to 1803....	5,307,194,000

But in the account, as thus framed, there are one or two obvious defects.

1. The first item should include not only the gold taken from the natives by their Spanish conquerors, but the whole quantity of the metal then in the country, and which continued to be available for use: seeing that a deduction is afterwards made, on the other side of the account, for the entire quantity supposed to have been retained in the country in 1803. If what was obtained by the Spaniards amounted to 25,000,000 piastres, it would seem a very moderate estimate to take the whole quantity in the country, in 1492, at 40,000,000 piastres.

2. Further, it will be observed that no allowance is made for the destruction of the metals by wear and tear, or for casual losses sustained in America during three centuries; though it is evident that there must have been such loss, and that what was so disposed of could no more have been sent to Europe than the quantity remaining in the country in 1803. If we allow, on this account, for gold and silver together only  $\frac{1}{4}$  per cent. per annum, on a probable average of 50,000,000 piastres in use, it will, in three hundred years, amount to 37,500,000 piastres.

The amended account will then stand thus:—

	Piastres.
Gold in use in America at the arrival of the Spaniards .....	40,000,000
Gold and silver raised from the mines between 1492 and 1803.....	5,568,194,000
	<hr/> 5,608,194,000
1. Deduct the quantity probably consumed in America during the three centuries ended in 1803.....	37,500,000
2. Also the quantity supposed to be remaining in America in 1803.....	153,000,000
3. And the quantity supposed to have been sent else- where than to Europe .....	133,000,000
	<hr/> 323,500,000
Total value of both metals sent to Europe, down to 1803.....	5,284,694,000
	<hr/>
Or, sterling (exchange at 4s. 3d.).....	£1,122,997,475

Such is, apparently, the best account that can be framed, down to 1803; and the only reason for placing any reliance upon it is, that no better can be framed.

### III.—*Duties levied by the Spanish Government.*

As a great part of the uncertainty attached to these accounts (down to 1803) arises from the known operation of the royal duties levied on the produce of the mines in the Spanish colonies, in stimulating the furtive appropriation of their produce, it is necessary to state what these duties were.

Before the discovery of America, the Spanish government allowed the working of mines in Spain, belonging to the Crown, only on a special permission, and on payment of a stipulated proportion of the produce, by way of rent. A royal ordinance, dated in 1504, fixed this proportion for the Spanish mines in America at *one-fifth*—whence it was afterwards called the *quinto*, even when the proportion had been changed. The booty obtained by Cortez, at the plunder of Mexico, paid this fifth to the Crown.

In 1525, it was decreed that special permission to work mines should no longer be necessary, but that every one might work whatever mines he could discover unoccupied, on paying the duties; and in 1584, it was ordered that the mines should become the property of those who discovered them, subject to the royal duties.

In 1548, to stimulate the miners, the *quinto* was reduced, in some districts, upon silver, to one-tenth. This reduction was continued, by successive ordinances, till 1572, and was then made perpetual; and in 1723, the same regulation was extended, without distinction, to all Spanish America, and to both metals.

An ordinance of Charles V. fixed the additional duty charged at the Mint for melting, assaying, and marking, at  $1\frac{1}{2}$  per cent. on the value, for each metal. During the two centuries ending in 1777, some trifling supplementary duties, added from time to time, raised the duties charged at the Mint from  $1\frac{1}{2}$  to  $2\frac{3}{4}$  per cent.; and by a decree of that date it was again reduced to the former amount.

The duties continued thus—one-tenth of the produce to the Crown, and  $1\frac{1}{2}$  per cent. additional to the Mint—from 1777 down to 1809



(when these countries ceased to be subject to Spain), and therefore till after the end of the period treated by Baron Humboldt\*.

It is apparent, then, that the duties were not, during the most fruitful period of the mines, what would have been deemed heavy upon any other description of produce. But the precious metals are so easily smuggled, that duties, levied as these were, must have been very light indeed to be generally effective. It is admitted by all the authorities that a large proportion of the silver raised did not pay the duty; and it seems to follow, that a still larger proportion of the gold must have escaped official notice.

## PART SECOND.—THE PERIOD FROM THE END OF 1803 TO THE END OF 1848.

### I.—1. CENTRAL AND NORTH AMERICA. *Authorities referred to.*

The most authentic materials existing, whence an account may be framed for the forty-five years included in this period, appear to be contained in a collection of returns elicited from British consuls resident in the mining countries of America, by a circular despatch written by our Foreign Minister (in pursuance of an address to the King from both Houses of Parliament) in 1830. These returns were made public in two sets—one in 1832†, and the other in 1843‡.

### 2. MEXICO. *Consuls' Returns, 1804-29; M. Duport's Statistics.*

After the separation of Mexico from Spain, the different provinces of the new Republic of Mexico ceased to send their silver and gold to the central mint; and afterwards, each province raising any considerable quantity of either set up a mint of its own.

From the returns above referred to, it appears that the total quantity of *silver* coined at the mint of the city of Mexico (which was the only legal mint in the country, while it remained subject to Spain) was, from 1804 to 1829 inclusive, after deducting the quantity *re-coined* in the same period, 268,661,720 dollars. The returns from the other legal mints of the Republic make no allowance for silver re-coined; nor does it appear whether any such allowance is necessary to their accuracy. The quantity they coined in the same period (1804-29) is stated to have been 81,918,147 dollars; making a total for all Mexico, in the twenty-six years, of 350,579,867 dollars.

The value of the *gold* returned, as issued from the mint of the city of Mexico in the same twenty-six years, after deducting the foreign gold coined, and adding the quantity sold to goldsmiths and others uncoined, was 18,130,961 dollars. And the value of the gold coined at the other legal mints of the Republic, in the same period, seems to have been only 237,850 dollars; making an apparent total of native

\* De la production des Métaux précieux au Mexique, &c., par St. Clair Duport, 8vo., Paris, 1843, pp. 162, *et seq.*

† P. P., No. 338, of 1832.

‡ P. P., No. 476, of 1843.

gold coined in Mexico, in the twenty-six years, of 18,368,811 dollars.

After 1829, these returns from the consuls give an account of the Mexican coinage only for four years, 1835 and 1836, and 1840 and 1841. But further information, which seems to be of a trustworthy character, is furnished by M. St. Clair Duport, in a work\* published in 1843. This gentleman states, in the preface to his work, that he had been resident in Mexico since 1826; and since 1836 had been engaged in refining the gold and silver presented at the mint of the city of Mexico; and thus had had constant intercourse both with the officers of the mint and with the principal miners. M. Duport, besides giving returns for the Mexican city mint for each year since 1790, which very nearly coincide with, and so confirm, in some degree, those obtained from the British consul, gives also a summary statement of the value of the gold and silver coined in *all the mints* of the Republic, from 1811 to 1840, inclusive. The two metals are, in this account, given separately for each mint, excepting that of Chihuahua, which (according to M. Duport) was opened in 1832. In this mint, the whole quantity coined, down to 1840, seems to have been only 1,641,215 dollars—a small proportion of the whole. If we supply the defect of distinction between the two metals, by assuming that, at this mint, the proportion of gold to silver, in value, was about the same as it was at the mint of the city of Mexico from 1803 to 1829, or about 16 to 1, the result of M. Duport's statement will be as follows:—

*Gold and Silver coined in the Mexican Mints from 1811 to 1840 inclusive, according to M. Duport.*

	Piastres (or Dollars).
Gold.....	16,263,336
Silver .....	296,583,376
	<hr/>
	312,846,712†

From this total it is necessary to separate the proportion due to the years subsequent to 1829, down to which year the consuls' returns appear to be complete.

### 3. Mexico; further details.

We learn from the consuls' returns, that in the seven years from 1804 to 1810, the net value of the *silver* issued from the mint of the city of Mexico amounted to 159,031,904 piastres (or dollars). The first provincial mints appear by these returns to have been set up in 1810; and in that year, it would seem that two of them coined silver to the aggregate value of 616,033 dollars: making a total of Mexican silver coined in the seven years 1804-10 of 159,247,937 dollars.

From the same authority (the British consul) we learn that the

\* De la production des Métaux Précieux au Mexique, &c., 8vo., Paris, 1843.

† This total is subject to considerable doubt, from palpable discrepancies between the Consul's returns and M. Duport's statements as to the several dates at which the provincial mints were opened. But in the absence of any means of clearing up this doubt, I can only mark it here as worthy of further investigation whenever opportunity may offer.



native *gold* issued from the Mexican city mint in these seven years was of the value of 9,181,767 dollars.

It has already been stated that the Mexican coinage of *silver*, for the twenty-six years from 1804 to 1829, amounted to 350,579,867 dollars. Deducting from this sum the value assignable to the seven years 1804-10, we have 191,331,930 dollars as the value due to the nineteen years from 1811 to 1829. And this latter sum, deducted from M. Duport's total for the thirty years 1811-40 (296,583,376 dollars), gives 105,251,446 dollars as the quantity coined in the eleven years 1830-40, inclusive.

By the same method, the gold coined in Mexico in the eleven years 1830-40, would appear to have been (according to M. Duport) worth 7,076,292 dollars.

The computation for each metal, down to 1840, will then stand as follows:—

Authority.	Silver.	Gold.
	Dollars.	Dollars.
By Consuls' returns—Coined in Mexico in the } 26 years 1804-29 .....	350,579,867	18,368,811
By the same authority—Coined in the 7 years } 1804-10.....	159,247,937	9,181,767
Whence, by subtraction, the value coined be- } tween 1811 and 1829 .....	191,331,930	9,187,044
By M. Duport—The value coined in the 30 } years 1811-40 .....	296,583,376	16,263,336
Whence, by a second subtraction, the value } coined in the 11 years 1830-40 .....	105,251,446	7,076,292

The consuls' returns give the values coined in the Mexican mints in 1841 as—silver, 12,781,747; and gold, 756,058 dollars.

In the Accounts of the Board of Trade (Supplement to part XIV., p. 451), the gold and silver coined at the Mexican mints in the five years 1842-46, is stated to have been as follows:—

	Silver.	Gold.
	Dollars.	Dollars.
1842.....	12,995,287	984,427
1843.....	11,621,480	620,532
1844.....	13,027,879	726,762
1845.....	14,357,884	783,910
1846.....	14,432,108	915,753
	66,434,638	4,031,384

Thus, then, it would appear that the production of the Mexican mines, as “registered” at the mints, from 1804 to 1846, inclusive, was as follows:—

	Silver.	Gold.
	Dollars.	Dollars.
In the 7 years 1804-10 .....	159,247,937	9,181,767
Yearly average. Silver 22,749,700		
,, Gold 1,311,600		
In the 19 years 1811-29.....	191,331,930	9,187,044
Yearly average. Silver 10,070,100		
,, Gold 483,500		
In the 11 years 1830-40.....	105,251,446	7,076,292
Yearly average. Silver 9,568,300		
,, Gold 661,500		
In the year 1841.....	12,781,747	756,058
In the 5 years 1842-46 .....	66,434,638	4,031,384
Yearly average. Silver 13,286,900		
,, Gold 806,270		
Totals in 43 years.....	535,047,698	30,232,545

The average for the eleven years 1830-40 is so low as fairly to excite some suspicion as to the accuracy of the account given by M. Duport for the entire period 1811-40, whence, by comparison with the consuls' returns, this average is deduced. But the grounds of this suspicion can only be got rid of by carrying the inquiry, as to that period, further than I have yet the means of carrying it.

#### 4. Mexico; Summary, 1804-48.

The official information yet available as to Mexico seems to close with the year 1846. But the quantity of each metal raised in the five preceding years having displayed no very considerable fluctuations, we may perhaps safely estimate the two remaining years of the period before us on the average of these five. The entire "registered" produce of Mexican silver and gold for the forty-five years 1804-48 will then amount to—

	Silver.	Gold.
	Dollars.	Dollars.
By accounts cited—1804-46 .....	535,047,698	30,232,545
By estimate—1847-48 .....	26,573,800	1,612,540
Totals in 45 years.....	561,621,498	31,845,085

M. Duport, in estimating (p. 190) the actual produce of the mines of Mexico for the year 1841, from the quantity of each metal *coined* in that year, sets down the quantity of *silver* not passing through the mints at about one-fifth of the whole, and the corresponding quantity of *gold* at about *five-eighths* of the whole. If this were the extent of



the contraband in 1841, it is scarcely likely to have been less on an average of the years from 1804 to 1840, or between 1841 and 1848. I therefore adopt these proportions as expressing the least probable quantity of each metal not “registered” at the mints. This brings out an ultimate total as follows:—

*Raised in all Mexico, from 1804 to 1848 inclusive.*

	Gold.	Silver.
	Dollars.	Dollars.
Passing through the mints .....	561,621,498	31,845,085
Not passing through the mints .....	140,405,374	53,075,140
Totals.....	702,026,872	84,920,225
Or, sterling, at 4s. 2d. per dollar .....	£146,255,598	£17,691,721

It should be observed that no formal change in the duties levied on the produce of the Mexican mines, as they were in 1803, was made till February 1822, when, by an order of the Mexican Government, a single duty of 3 per cent. on the value was ordered to be levied on both metals, as against all the operations of assaying, smelting, refining, separation of gold from silver, and coining. A further duty, for the benefit of the mining establishment of the Government (*Mineria*) at Mexico, and equivalent to about  $1\frac{1}{2}$  per cent. on the value, was afterwards levied on silver only\*. And so the duties seem to have remained down to 1843, since which date I have no information.

## II.—SOUTH AMERICA. *Changes in the Political Geography of the Mining Countries.*

Before entering on an examination of such accounts as are available of the produce of the mines of South America since 1803, it is necessary to observe, somewhat precisely, the difference between the names of the several mining countries and their territorial divisions, as these were in the last century, under the Spanish dominion, and as they have been since.

One change of this description, and one of some importance, took place during the period dealt with by Baron Humboldt, and has been by him duly allowed for:—In 1778, a great part of what had previously been the vice-royalty of Peru, including its richest mines, was detached, and added to the neighbouring vice-royalty of Buenos Ayres. (See “Humboldt’s New Spain,” III., 339.)

At the commencement of the present century, and down to the revolt of the Spanish-American colonies, these colonies were divided into eight sections:—the vice-royalties of New Granada, Peru, and Buenos Ayres, and the captain-generalships of Chili, Venezuela, Guatemala, the Havana (or Cuba), and Porto Rico. Of the two last named, as they do not appear to have afforded, in the present century, any supply of the precious metals, nothing more need be said here.

\* Duport, p. 162.

The following are the names of the rest, comparatively, in 1803 and in 1848 :—

In 1803.	In 1848.	REMARKS.
Peru.....	Peru .....	The Peru of the Spaniards in 1803 was nearly identical, apparently, with what is now commonly called " <i>Peru</i> ," but sometimes North or Lower Peru.
Buenos Ayres ...	La Plata .....	Sometimes called Buenos Ayres, that being the name of the capital city.
	Bolivia .....	Sometimes called South or Upper Peru, and before 1778 forming part of what was <i>then</i> called " <i>Peru</i> ."
	Paraguay, and Uruguay.....	Sometimes spoken of as including, and sometimes as excluding the <i>Banda Oriental</i> , of which the capital, and chief port, is <i>Monte Video</i> .
New Granada ...	New Granada and Equador ...	From 1819 to 1831 New Granada was almost constantly united in one republic with Venezuela; and from about 1823 to 1831 Equador also was included in the union. Since 1831 they have formed separate republics. The common name during their union was " <i>Columbia</i> ."
Venezuela .....	Venezuela .....	From 1819 to 1831, with one or two short intervals, united in the republic of <i>Columbia</i> .
Guatemala .....	Guatemala .....	United to Mexico for a short period between 1821 and 1823.

### III.—1. SOUTH AMERICA. *Mining Countries examined in detail.* *Peru; Produce of Silver. General results.*

Mr. Belford Wilson, the British Consul at Peru, appears to have taken much trouble to obtain the most perfect returns possible of the silver smelted and coined, and of the gold coined, under official inspection, in Peru, from 1790 down to the end of 1839.

Between the two sets of returns as to silver—of the quantity *smelted* and the quantity *coined*—there is a remarkable difference. In the greater part of the period the quantity coined is in excess, and in some years is very much in excess. For this there seem to be two causes of an ordinary character—(1) the re-coining of old and worn coin; and (2) the conversion of silver plate into coin. Mr. (since Sir) Woodbine Parish, writing from Buenos Ayres on this subject, in 1831 (P. P. 338, p. 27), observes, that—

"A vast quantity of silver was employed for domestic purposes in the houses of all classes of the people in the time of the old Spaniards."

When the principal Spanish families left the country, in the first years of the revolutionary disturbance, it is probable that, as the export of silver otherwise than in the shape of coin was prohibited, their plate was very generally converted into that shape. Much of the church-plate also appears, from time to time, to have been sent to the mint to provide subsistence and pay for the contending armies. And the interruption, more or less, of every peaceful occupation, and the consequent



impoverishment of individuals, must have induced or compelled the conversion of much silver into coin which had previously been held in other forms. A summary comparison of the two sets of returns for the thirty-six years 1804 to 1839, inclusive, shows that the coinage was most in excess of the smelting during the first and most disturbed years of the revolutionary movements in Peru.

Periods.	Value returned as Smelted.	Value returned as Coined.	Value Coined in Excess of the Value Smelted.
	Dollars.	Dollars.	
The five years 1804-8 .....	19,389,138	20,988,937	8 per cent.
The six years 1809-14 .....	19,781,627	24,944,584	26 "
The five years 1815-19 .....	15,673,270	17,657,772	12 "
The four years 1820-23 .....	5,846,288	7,488,210	8 "
The five years 1824-28 .....	8,223,109	8,998,075	9½ "
The six years 1829-34 .....	13,951,478	15,150,238	8½ "
Totals.....	82,864,910	95,227,816	
The five years 1835-39 .....	14,506,721	13,787,552	{ (Value smelt- ed in excess.)
Total returned as smelted in the 36 } years 1804-39 inclusive.....	97,371,631		

In view of these figures, it seems justifiable to prefer the quantity smelted to that coined, as a basis for computing the unknown quantities raised and exported.

Repeating the quantities returned as smelted, in equal periods of five years each, they indicate the following variations in the apparent annual production:—

Periods.	Whole Quantity returned as Smelted.	Annual Average.
	Dollars.	Dollars.
In the year 1804 .....	4,848,780	4,848,780
In the five years 1805 to 1809....	18,399,289	3,679,857
„ 1810 „ 1814....	15,922,696	3,184,539
„ 1815 „ 1819....	15,673,270	3,134,654
„ 1820 „ 1824....	6,428,268	1,285,653
„ 1825 „ 1829....	8,821,790	1,764,358
„ 1830 „ 1834....	12,770,822	2,554,164
„ 1835 „ 1839....	14,506,721	2,901,344
Total.....	97,371,636	

For the nine years 1840-48, I find no positive information; but from all I can learn of the opinions of individuals supposed to be well informed, it may be assumed that the average production of the five years 1835-39 was maintained down to 1848, if not exceeded. Taking 3,000,000 dollars as the annual average of this period, we have to add, for these nine years, 27,000,000 dollars.

2. *Peru; Corrections; Legitimate Trade.*

The information afforded by the despatches accompanying the consuls' returns also enable me to make some corrections in the above totals as to Peru.

1. It is stated that about 1,000 marcs (weight) of the silver returned as smelted at one of the smelting-houses ("Trujillo") in 1824, consisted of church-plate. The marc being worth  $8\frac{1}{2}$  dollars, a deduction must be made, on this account, of 8,500 dollars.

2. The account from another of the smelting-houses (that of "Pasco") is in blank for the four years 1821-24, and the explanation given is, that the records for those years are lost. It is necessary to fill up these blanks, and it can only be done by estimate, having due reference to the records of the years previous and subsequent. The average quantity smelted at Pasco in the five years ending with 1820 (before the blank), was 192,612 marcs, and that of the five years 1825-29 (immediately after the blank), was 145,178 marcs. The mean of these two sums is 168,895 marcs; and taking this as the probable average of the four years in question (1821-24), it gives for that period a total of 675,580 marcs; whence is requisite an addition of 5,742,340 dollars.

3. It is also stated by the consul that a third smelting-house (that of "Tacna") was discontinued after 1830, and permission granted to export from that district silver in its native state, on payment of a dollar per marc down to 1833, and of half a dollar per marc afterwards; but we have no account of how much was so exported. The average annual quantity returned as smelted in this locality in the ten years ending with 1830, was 2,810 marcs, or 23,885 dollars. A like average for the eighteen years ending with 1848 would amount to 429,930 dollars; whence it will be requisite to add this sum to the returns of the quantity smelted in Peru down to that date.

4. And, lastly, it is to be observed, that the valuation used in these returns in converting the weight of silver smelted, in marcs, into its value in dollars ( $8\frac{1}{2}$  dollars to the marc), is that proper for *standard* silver, of 10 dwts. 20 grains; whereas the consul says the bars referred to are usually of greater fineness—say 11 dwts. 22 grains—a difference of about  $12\frac{1}{2}$  per cent. in excess: whence an addition, in this proportion, is necessary to the correctness of the inferences drawn from these returns.

The entire quantity of silver which may be supposed to have passed under official cognizance, as raised in Peru, from the end of 1803 to the end of 1848, may therefore be summarily stated as follows:—

	Dollars.	
According to the returns, the quantity smelted from the end of 1803 to the end of 1839 was, as already stated....	97,371,636	(1803-39.)
Add for omissions, as explained, from the accounts of the smelting-house of "Pasco" in the four years 1821-24....	5,742,430	(Correction.)
Add, also, the amount supposed to have been exported unsmelted from the district of "Tacna" in the eighteen years 1831-48 .....	429,930	(Correction.)
Add, also, for the quantity probably smelted throughout Peru in the nine last years 1840-48, for which there are no returns, assuming a continuance of the average of the five years immediately preceding.....	27,000,000	(1840-48.)
Carried forward.....	130,543,996	



Brought forward as the quantity which would probably appear to have been smelted in the 45 years, had the returns, as they now stand, been complete.....	Dollars.	130,543,996
Add, for the fineness of the silver beyond the standard, (12½ per cent.)* .....		16,311,998
		<hr/> 146,861,994
Deduct for church plate smelted at Trujillo .....		8,500
		<hr/> 146,853,494

### 3. Peru; Contraband Trade; Summary.

The above may be supposed to represent the entire quantity passing into the market under the eyes of the authorities. It remains to allow for the quantity passing into the market without such inspection. The addition on this account must needs be made by guess; and the safest guide in making such a guess is, perhaps, the opinion of Mr. Belford Wilson, before mentioned, the British Consul at Lima, who seems to have taken no little personal trouble, and incurred some expense, in obtaining information on the whole subject. This gentleman says, in a despatch dated in April 1841, (being the latest yet published on the present subject from that quarter,) "It is estimated that one-third more is raised in the departments specified (excepting 'Pasco,' to which one-fifth only may be given), and smuggled out of the country in the state of 'plata pina' (pine silver); and about 100,000 marcs more from other places not therein specified, and for which no accurate data can be procured."

The proportion probably smuggled from the district of "Pasco" being less than that from other places, it is requisite to compute it separately, and for that purpose to ascertain, as nearly as may be, how much of the whole quantity smelted during the forty-five years in question passed through the smelting-house of "Pasco," as distinguished from the others.

By the returns already referred to, it appears that there passed through the smelting-house of "Pasco"—

	Marcs.
In the 16 years 1804-19 .....	3,042,446
In the 15 years 1820-34 .....	2,665,483
Add, as above estimated, for the 4 years 1821-24 .....	675,580
Add, in the 5 years 1835-39 .....	1,278,197
Add, for the 9 years 1840-48, at the same average rate as in the 9 years immediately preceding.....	2,300,755
Add, as before, 12½ per cent. for fineness of silver in excess of what is assumed in the returns .....	1,245,307
	<hr/>
Total quantity apparently due to "Pasco," in marcs.....	11,207,768
	<hr/>
Or, in dollars, at 8½ to the marc.....	95,265,028
	<hr/>
One-fifth, the proportion probably smuggled .....	19,053,005

The total production, by the official returns, being 146,861,994, and the proportion due to "Pasco" being 95,265,028, it follows that

$$\begin{array}{r}
 * 130,543,996 \\
 \hline
 13,054,399 \\
 3,263,599 \\
 \hline
 16,317,998
 \end{array}$$

the proportion due to the other smelting-houses is 41,596,966, of which one-third (the proportion Mr. Belford Wilson proposed to allow for smuggling) would be 13,865,655 dollars.

Whence the total produce of the Peruvian mines for the period of forty-five years (1804-48) may be estimated as follows:—

	Dollars.
Apparently passed under official inspection .....	146,853,494
Probably smuggled from the district of Pasco.....	19,053,005
From other districts whence returns have been obtained....	13,865,655
	<hr/> 32,918,660
Probably raised in districts whence “no accurate data can be obtained”:—	
Mr. Belford Wilson estimates this at 100,000 marcs a-year, for the five years 1835-39. This would be about one-fourth of the whole quantity returned as smelted during the same period; and if, as seems reasonable, the same proportionate allowance be made for the entire period, there remains to be added one-fourth of 146,853,494 dollars, or .....	36,715,498
	<hr/>
Total for Peru (silver) .....	216,485,527

#### 4. *Peru; Inducement to Smuggle the Precious Metals.*

The exportation of gold or silver, uncoined, from Peru, except by special permission of the Government, appears to have been always hitherto prohibited.

According to the consul's report (July 1836, P. P. 476, p. 16), the duties levied at the mints amount to about  $7\frac{1}{4}$  per cent. on the value of the *silver* brought in; and it is estimated, that when the expenses of smelting, assaying, coining, &c., are paid, this leaves but a small profit, if any, to the Government. But it would also appear, from a comparison of the prices realized by silver exported, that, if intended for exportation, the value of the silver is in some degree *depreciated* by the fact of its being coined. *Silver*, in bars, of the Peruvian standard (10 dwts. 20 grains), is received at the mint for about 7 dollars 7 rials per marc; and when smuggled on board an exporting vessel, it may be sold (says the consul) for 9 dollars 2 rials. The contraband price (for export) is therefore more than 14 per cent. higher than the mint price.

The inducement to smuggle gold seems to be considerably less; as it is stated (P. P. 476, p. 18), that a marc of 8 ounces—21 carats fine—which at the mint would be received for nearly 130 dollars, sells, when smuggled on board, for 136 dollars; giving little more than 4 per cent. profit to the smuggler. On the other hand, however, gold is much more easily smuggled than silver.

#### 5. *Peru; Produce of Gold, 1804-48.*

It is stated in the consul's returns, as might be expected, to be impossible to procure accounts of the quantity of gold *raised* in Peru. Mr. Belford Wilson, writing from Lima, in July 1836, says, “The greater proportion of the gold produced in the country is smuggled out of it in the shape of bullion, in that state its exportation being altogether prohibited.”

The available returns consist, therefore, entirely of accounts of the gold coined at the government mints.

Down to 1824, there was only one mint: that at Lima. In 1824, a second mint was set up at Cuzco; but no gold was coined there till 1826.



The coinage accounts, for both mints, give the following figures:—

*Value of Gold coined.*

	Dollars.
In the 5 years 1804-08 .....	1,829,803
„ 1809-13 .....	2,345,090
„ 1814-18 .....	3,295,756
„ 1819-23 .....	1,516,383
In the 2 years 1824-25 (“No coinage.”)	
„ 3 „ 1826-28 .....	597,471
„ 5 „ 1829-33 .....	628,015
„ 6 „ 1834-39 .....	509,647
(The official information extends no further.)	
	11,837,587

Add, for the 9 years 1840-48, assuming the annual average of the 14 years preceding (1826-39) to have been continued ( $123,938 \times 9 =$ ) 1,115,422

11,837,587

As to the contraband, as “the greater proportion” of the sum total is supposed, by the authorities on the spot, to have been smuggled, we may perhaps safely adopt the same rule as is applied by M. Duport to the gold coinage of Mexico, and assume that it represents three-eighths of what is raised. Add, therefore, five-eighths of the whole 19,729,311

Making a probable total of *Gold* raised in Peru in the 45 years 1804-48 of 31,566,898

IV.—1. SOUTH AMERICA. *Buenos Ayres; the old Spanish Vice-Royalty, and its subsequent new Divisions.*

BUENOS AYRES. *The Spanish Vice-Royalty, 1804-08; and its subsequent Sections—Bolivia, La Plata, Paraguay, Uruguay, and the Banda Oriental, 1809-48.*

The British Consul at the city of Buenos Ayres, writing in June 1831, transmitted accounts of the *silver* carried to the mint of the vice-royalty of Buenos Ayres, at Potosi, from 1788 to 1807, inclusive; and of the *gold* brought to the same mint down to the end of 1808; after which dates the revolution broke up the Spanish rule. These accounts were obtained from the records of the mint, still preserved.

The returns of the *silver* passing through the royal mint in the four years 1804-7 are as follows:—

	Dollars.
1804 .....	3,202,120
1805 .....	3,239,970
1806 .....	3,152,675
1807 .....	3,673,071
	13,267,836
Add, for the year 1808, not included in the return, in like proportion* .....	3,316,959
	16,573,795
Add, for smuggling, one-third (one-fourth of the whole)	5,524,598
	22,098,393

\* This seems to be quite justified by the quantity returned as having been brought to the Royal Rescate Bank of Potosi in 1808: the quantity for that year being 2,519,630, against 2,608,259 in 1807; and this bank having, for a very long period, received about five-sixths of the quantity annually passing through the mint.

The *gold* returned as coined in the five years 1804-08 is as follows:—

	Dollars.
1804 .....	359,924
1805 .....	784,890
1806 .....	619,820
1807 .....	624,716
1808 .....	571,608
	<hr/>
	2,960,958
Add, for smuggling, five-eighths of the whole	4,934,930
	<hr/>
	7,895,888

	Dollars.
Whence, <i>Silver</i> raised in Buenos Ayres 1804-08.....	22,098,281
<i>Gold</i> "                   "                   .....	7,895,888
	<hr/>
Total (1804-08).....	29,994,281

## 2. *Bolivia; or the Northern Section of the old Vice-Royalty.*— *Produce of Gold and Silver.*

From Bolivia, we have no returns dated earlier than 1835; but the British consul at Buenos Ayres (the ancient capital of the vice-royalty) sent home, in 1831, an account of the *silver* bought by the Rescate Bank of Potosi from 1807 to 1826, inclusive, computed from an account of the government duties paid on such silver. From another account of the silver bought by this Bank in the twenty years ending with 1807, it appears that, during the whole of *that* period, it received, very regularly, about five-sixths of the quantity passing through the mint of Potosi.

	Dollars.
The quantity of silver returned by the Consul as bought by the Bank in the 18 years 1809-26, is .....	29,073,868
To which, adding one-fifth (or one-sixth of the whole) gives, in the opinion of the Consul, a near approximation to the quantity that would probably have passed through the mint, in the same period, under the old rule .....	5,814,773
	<hr/>
	34,888,641
The Consul thinks "an addition of 20 <i>per cent.</i> " sufficient to cover the quantity smuggled during the same period ( $34,888,641 \div 5 =$ ) ....	6,977,728
	<hr/>
Whence— <i>Silver</i> probably raised in the northern section of what was the Spanish Vice-royalty of Buenos Ayres in the 18 years 1809-26 ....	41,866,369

The only further information contained in the consuls' returns as to this section of the vice-royalty, appears in a despatch from the British consul at Lima, dated in April 1838, stating the coinage of *gold* and *silver* at the mint of Potosi in 1836 and 1837; and another despatch from the British consul at La Paz, in Bolivia, stating the quantity of *each metal* coined in Bolivia from 1830 to 1837, inclusive.

As the two accounts do not differ widely, for the two years included in both, and they seem to rest on about equal authority, I take only that of the latest date, and which comes from the capital of the country in question (Bolivia).

The silver coined is said to have been of two qualities: the dollars



being coined of the full standard of the old Spanish dollar (10 dwts. 20 grains), while the smaller pieces contained only 66 per cent. of silver, and so were about 26 per cent. inferior to that standard.

	Dollars.
The return referred to gives the total coinage of <i>dollars</i> for the 8 years 1830-37, at .....	14,459,072
And of small money .....	1,487,261
Less 26 per cent. ....	386,687
	<hr/> 1,100,574
<i>Silver</i> coined in the 8 years 1830-37 (standard) .....	15,559,646
(The periods from 1804 to 1809, and from 1809 to 1826 have been dealt with above.)	
Add (in the same proportion as for the 8 years 1830-37) for the 14 years still deficient down to 1848* .....	27,229,380
	<hr/> 42,789,026
Add, for contraband, one-third .....	14,263,008
	<hr/> 57,052,034
Total— <i>Silver</i> —Bolivia—1827-48 .....	

The *gold* brought to the royal mint of Potosi in the five years 1804-08 is stated to have amounted to 2,960,958 dollars; giving an average of 592,191 dollars per annum. In the returns (above referred to) from the same district, under its new name of “Bolivia,” it is stated that very little gold was coined there before 1835; and that the value of what was coined in the three years 1835-6-7 amounted to 453,250 dollars, giving a yearly average of only 151,083 dollars. The gold brought to the mint of Potosi in the five years 1804-08 was collected from the *entire vice-royalty*; and it will be seen presently, that after the Spanish dominion ceased (1808), large quantities of both gold and silver, instead of passing northwards to the mint at Potosi, left the country in the opposite and more convenient direction, by the River Plate and its affluents. After considering these various accounts, I am inclined to think, that if the average coinage of the three years 1835-6-7 be taken to indicate, for the whole period from 1809 to 1848, inclusive, about three-eighths of the whole quantity raised, the estimate for this part of the vice-royalty will approach what is probably true. It will then stand as follows:—

<i>Gold</i> —For the 40 years 1809-48, in the northern section of the country, or Bolivia only, at an annual average of 151,083 dollars.....	Dollars. 6,043,320
Add, for contraband, five-eighths of the whole .....	10,072,202
	<hr/> 16,115,522
Total— <i>Gold</i> —Bolivia, 1809-48 .....	

### 3. *La Plata, &c.; Produce of Gold and Silver.*

For the southern section of the old vice-royalty of Buenos Ayres, comprising *La Plata, Paraguay, Uruguay*, and the *Banda Oriental*, we have no coinage accounts, nor any others that might supply their place, excepting customs' accounts of exports, for a few years, at each of the

\* 1827-29..... = 3 years.  
 1838-48..... = 11 „  


---

 14 „

ports of *Buenos Ayres* and *Monte Video*, on the estuary of the River Plate.

Under the Spanish authorities, the customs' accounts of the port of *Buenos Ayres* were too imperfect and inaccurate to afford any trustworthy information; and as it was forbidden to export either gold or silver which had not passed through the mint at Potosi, and there paid the royal duties, probably very little was exported in a regular manner. The *new* authorities seem to have adopted different rules at different times—sometimes prohibiting the exportation altogether, at other times permitting it on payment of duties, generally very high, but on one occasion low enough, apparently, to induce the passage of a considerable quantity of both metals through the custom-house. From 1822 to 1826, inclusive, a period of five years, the export duty was only 2 per cent. on the value of each metal. The duty was paid on silver to the value of 5,636,862 dollars; and on gold to the value of 1,795,906 dollars: giving an annual average, for the *silver*, of 1,127,372, and for the *gold*, of 359,181. The returns for these five years are alone available; and if we assume that they present as near an approximation to the whole quantity of each metal exported from the surrounding country, since the cessation of the Spanish dominion, as the Mexican mint returns are supposed to present of the silver and gold raised there, the value of each exported from *the districts of which Buenos Ayres is the chief port* may be estimated as follows:—

*Silver—*

	Dollars.
From 1809 to 1848, forty years, at an annual average of 1,127,372 dols.	45,094,880
Add one-third for contraband (one-fourth of the whole) .....	15,031,626
Total, Silver, 1809-48 .....	60,126,506

*Gold—*

	Dollars.
From 1809 to 1848, forty years, at an annual average of 359,181 dollars	14,367,240
Add five-eighths of the whole for contraband .....	38,312,640
Total, Gold, 1809-48 .....	52,679,880

The British Consul at *Monte Video*, writing in May 1831, sent home an imperfect official account, but the best he could procure, of the shipments of "*specie*" (apparently both *gold* and *silver*) from that port, from 1803 to 1817, inclusive. It is as follows:—

	Dollars.		Dollars.
In 1803 .....	2,260,125	In 1810 .....	872,880
„ 1804 .....	7,722,372	„ 1811 .....	319,869
„ 1805 .....	31,836	„ 1812 .....	132,020
„ 1806 } „Accounts missing.”		„ 1813 .....	257,636
„ 1807 }		„ 1814 .....	37,750
„ 1808 „No shipments of specie.”		„ 1815 } „Accounts missing.”	
„ 1809 .....	1,887,252	„ 1816 }	
	11,901,585	„ 1817 „No exportation of specie.”	
			1,620,155

Here the irregularity is such as to destroy all confidence in the account, as an index to the actual quantity either produced or exported. The comparatively large quantity exported in 1804 is unaccounted for. The excess in 1809-10 may be attributed to the revolutionary troubles



inducing the exportation of portable property to Europe. The only safe conclusion upon the whole account seems to be, that it very imperfectly reflects the export trade. This is evidently the opinion of the consul himself. The final words of his despatch are, "The years of 1803 and 1804 may be taken as the ordinary (sic) of shipments of specie from Monte Video."

If this be so, the average of these two years being, by the above account, 4,991,248 dollars, it may be assumed that complete accounts would have shown a total quantity exported, in the forty years from 1809 to 1848, inclusive, of about 200,000,000 dollars, or 5,000,000 a-year. And as, excepting the not very large value allowed for already as exports from the port of Buenos Ayres, none of the accounts before us seem to include what may be supposed to have been raised in that period in the extensive provinces of La Plata, Paraguay, Uruguay, and the Banda Oriental (being so much of the old vice-royalty of Buenos Ayres as, when relieved from the Spanish yoke, would more probably export its silver and gold through the convenient and natural channels of the River Plate and its affluents, than through Potosi), I venture to add this sum as probably raised in the districts using the port of Monte Video in the entire forty years . . . 200,000,000 dollars.

In the absence of any other clue to the quantity of each metal likely to have been contained in this total, I divide it in the same way as the mass set down as raised in the districts of Buenos Ayres, or 47 per cent. *gold* . . . 94,000,000 dollars.

And 53 per cent. *silver* . . . 106,000,000 „

Total (1809-48) . . . 200,000,000 „

*Summary for Bolivia, La Plata, &c.*

	Silver.	Gold.
	Dollars.	Dollars.
Raised in the Vice-royalty of Buenos Ayres } 1804-08 .....	22,098,281	7,895,888
Raised in Bolivia, or the northern section of } the Vice-royalty, 1809-26 .....	41,866,369	} 16,115,522
Do. do. 1827-48 .....	57,052,034	
	121,016,684	24,011,410
Probably raised in the districts served by the } Port of Buenos Ayres, in the southern section } of the Vice-royalty, in 1809-48.....	60,126,506	52,679,880
The like as to the Port of Monte Video, in the } same period.....	106,000,000	94,000,000
	287,143,190	170,691,290

V.—SOUTH AMERICA. *The old Spanish Captain-Generalships, and their subsequent Divisions—Chili; Gold and Silver.*

The Consuls' returns from Chili, of various dates, from 1831 to 1842, are, in some respects, inconsistent with each other; but after a careful comparison of all the figures, the net result appears to me to be as follows :—

The quantity of each metal coined at the mint of Santiago, where, down to 1826, all the gold and silver raised in Chili was required to be sent, before exportation, is returned as under :—

	Silver.	Gold.
	Dollars.	Dollars.
In the five years 1804-08 .....	820,046	3,407,344
„ 1809-13 .....	1,295,285	3,621,170
„ 1814-18 .....	2,199,823	2,864,198
„ 1819-23 .....	694,468	2,322,180
„ 1824-30 .....	32,177	692,532
	5,041,799	12,907,424

Mr. Consul Carter, writing from Coquimbo, in January 1831, after consulting (in the absence of official information) “the most experienced and most intelligent men of the province,” forwards an estimate of the quantity of each metal raised in Chili and *exported from the port of Coquimbo* alone, from 1790 to 1830, which, for the period subsequent to 1803, gives the following results:—

Silver—	Dollars.
From 1790 to 1810 an annual average of 200,000 dollars a-year. For the 7 years 1804-10 .....	1,400,000
For the 20 years 1811-30 .....	7,780,000
(The low average of these years is partly accounted for by the fact that the Spaniards had possession of Coquimbo and the surrounding country for the 4 years 1814-17. And it will be observed, in the above account, that an increased quantity of silver reached the <i>Mint at Santiago</i> in that period.)	

Estimated total exported from Coquimbo in 27 years, 1804-30....	9,180,000
---	-----------

Gold—	Dollars.
From 1790 to 1810 an annual average of 150,000 dollars a-year. For the 7 years, 1804-10 .....	1,050,000
For the 20 years 1811-30 .....	3,400,000
	4,450,000

It will be observed that this makes the value of the silver exported twice as great as that of the gold—reversing the proportions brought to account at the mint.

Mr. David Ross, who appears to have succeeded Mr. Carter as consul at Coquimbo, and to have been somewhat more successful in obtaining information, writes thence, in November 1831, saying, that the above account is, *as to silver*, tolerably correct; but that as regards the quantity of gold *raised* in that province, it is “very erroneous,” as he considers it should have been “about *three times the amount mentioned* in the said statement.” Whether Mr. Ross uses the word “raised” in strict contradistinction to the word “exported,” as used by Mr. Carter, is not distinctly apparent: the context leads to the conclusion that he does *not*. That Mr. Ross’s statement may be correct, is the more probable, as, for nearly the whole period in view (that is to say, down to 1826), the export trade referred to was entirely *contra-*



*band.* After 1826, when the prohibition of the exportation of gold and silver (which had not first been sent to the mint at Santiago for coinage) was removed, the quantity received at the mint seems to have fallen, rapidly, to a very small amount. I therefore amend Mr. Carter's statement, as suggested by Mr. Ross: when it will stand thus:—

	Dollars.
Silver exported from Coquimbo, 1804-30 .....	9,180,000
Gold „ „ (4,450,000 × 3 =) .....	13,350,000

Taking the two accounts together, viz., that from the mint, and that from Coquimbo, I would then base upon them the following general estimate for the period to which they refer:—

	Silver.	Gold.
	Dollars.	Dollars
Coined at Santiago, 1804-30 .....	5,041,799	12,907,424
Exported, contraband, out of the Port of Co-	9,180,000	13,350,000
quimbo, down to 1826, and, regularly and		
contraband together, from 1826 to 1830.....		
	14,221,799	26,257,424
Similarly exported, from other ports, of which	8,000,000	20,000,000
no accounts have been obtained .....		
Total for 27 years, 1804-30 .....	22,221,799	46,257,424

There are also, among the consuls' returns, annual accounts made up by the Chilian Government (confessedly, however, from very defective information) of the gold and silver known to be exported, coined and uncoined, for the eight years 1834-41, as follows:—

Years.	Gold, in Marcs.	Equivalent in Dollars at 144½ to the Marc.	Silver, in Marcs.	Equivalent in Dollars at 8½ to the Marc.
1834.....	3,852	556,614	164,935	1,401,947
1835.....	4,029	582,190	231,988	1,971,918
1836.....	4,953	715,708	163,158	1,386,843
1837.....	5,031	726,979	219,482	1,865,597
1838.....	5,283	763,393	135,854	1,154,759
1839.....	3,854	556,903	148,089	1,258,756
1840.....	6,430	929,135	141,621	1,203,778
1841.....	4,246	613,547	140,123	1,191,045
		5,444,469	....	11,434,643
Add, for this period, one-third (one	fourth of the whole) for silver not brought to account, and one-half (of the whole) for gold .....	1,814,823	....	11,434,643
		7,259,292	....	23,869,286
Add, for the 3 years (1831-2-3,) yet		2,722,233	....	8,950,980
unaccounted for, at the same average				
rate as the 8 following years 1834-41 }				
And for the 7 remaining years, 1842-48, }		6,351,881	....	20,885,626
at the same average rate.....				

Summary for Chili—1804-48.

	Silver.	Gold.
	Dollars.	Dollars.
In the 27 years 1804-30 .....	22,221,799	46,257,424
„ 3 „ 1831-33 .....	2,722,233	8,950,980
„ 8 „ 1834-41 .....	7,259,292	23,869,286
„ 7 „ 1842-48 .....	6,351,881	20,885,626
Total, Chili, 45 yrs.—1804-48	38,555,205	99,963,316

2. Colombia : Gold and Silver.

The only remaining countries in South America yielding either gold or silver are *Colombia* and *Brazil*.

Colombia is nearly identical with the old Spanish captain-generalship of New Grenada. It is, as I have said, now divided into three independent republics: Venezuela, New Granada, and Equador; which took the collective name of “Colombia” for the first time on achieving their independence of Spain, in 1819, and retained it, politically, while their alliance lasted—down to 1823.

All three divisions of the country yield more or less of the precious metals. But as it was part of the policy of Spain to encourage *agriculture* in this, the most fertile section of its American possessions, to the exclusion of mining, in order to provide supplies for the rest, little attention was given to the mineral wealth of the country while the Spanish rule lasted; and since that period, civil war and political dissensions, and the consequent insecurity of property, have impeded the application of capital to the production of these metals; and nearly all that is produced appears to consist of gold washed from the soil, in small quantities, by manual labour.

The information afforded by the consuls’ returns comes down only to 1829. Down to that year, two mints were at work in New Granada—one at Bogota, and the other at Popayan. We have returns from both of the quantity of each metal coined from 1790 to 1829, inclusive:—

At the Mint of Bogota :—

	Coined.	Annual Average.
	Dollars.	Dollars.
<i>Gold—</i>		
In the 8 years 1804-11 .....	10,285,344	1,285,000
„ 8 „ 1812-19 .....	8,465,472	1,058,000
„ 10 „ 1820-29 .....	9,688,802	968,800
(26 years.) Dollars....	28,439,618	1,093,000
<i>Silver—</i>		
In the 8 years 1804-11 .....	35,559	4,444
„ 8 „ 1812-19 .....	157,033	19,629
„ 10 „ 1820-29 .....	355,559	35,455
(26 years.) Dollars....	548,151	21,000



At the Mint of Popayan :—

	Coined.	Annual Average.
<i>Gold—</i>	Mares.	Mares.
In 10 years 1804-13 .....	57,030	5,703
„ 10 „ 1814-23 .....	25,853	2,585
„ 6 „ 1824-29 .....	32,505	5,417
Mares .....	115,398	4,438
Or, in dollars, at 136 to the Marc, (according to the Colombian law of 1821) ....	15,686,128	603,300

<i>Silver—</i>		
In 10 years 1804-13 .....	4,004	400
„ 10 „ 1814-23 .....	7,710	771
„ 6 „ 1824-29 .....	10,339	1,723
Mares .....	22,053	848
Or, in dollars at 8½ to the Marc	187,450	7,209

Whence the value probably coined\* during the forty-five years 1804-48 may be inferred thus :—

	Gold.	Silver.
	Dollars.	Dollars.
Coined at Bogota 1804-29 (26 years) .....	28,439,618	548,151
„ in the 19 years 1830-49, at the same average rate as in the 10 years 1820-29 .....	18,408,724	675,563
Coined at Popayan 1804-29 .....	15,686,128	187,450
„ in the 19 years 1830-49, at the same average rate as in the 6 years 1824-29 .....	13,997,528	278,264
Dollars.....	76,531,998	1,689,428

It is stated, by the consul at Bogota, who obtained the mint returns, that nearly the whole of the silver coined at the mint of Bogota, and all that coined at Popayan, consisted of old coin, and of plate and other articles the metal of which was not raised in Colombia. The little native silver coined at Bogota was separated from the native gold, and did not, it is said, exceed 2,000 dollars a-year in value.

It is not supposed that more than a small proportion of the gold obtained in the country has reached the mint, as the duties levied amounted to 16 per cent., and payment for the gold brought to the mint was often long delayed. I apply here, therefore, M. Duport's estimate of the proportion of gold brought to the mints in Mexico; and assume that the quantity coined represents about three-eighths of the

\* The probability is here deduced from data which ought to be fortified by further investigation on the spot.

whole. The duties are much lighter in Mexico, and the facilities for smuggling not greater. Allowing *one-tenth* of the silver coined to be equal to the whole quantity produced, the final result would stand thus:—

	Dollars.
<i>Gold</i> passed through the mints in 45 years, 1804-48 .....	76,531,998
Add, for the quantity smuggled, probably five-eighths of the whole ...	127,553,330
<b>Total Gold</b> .....	<b>204,085,328</b>
Add for <i>Silver</i> .....	170,000
<b>Total in 45 years.—(Colombia).....</b>	<b>204,255,328</b>

## VI.—SOUTH AMERICA. *Old Portuguese Colonies; Brazil.*

Of the quantity of gold produced in Brazil since the beginning of the century, we have no regular accounts, and very few materials on which to base an estimate. Baron Humboldt, in the memoir before referred to, published in 1838, states the mean production of the Minas Geraes (the chief gold district) to have been, from 1810 to 1817, only 1,600 kilogrammes—about 3,360 pounds *avoirdupois*, or 4,266 lbs., or 51,192 ounces *troy* weight—which, at the extreme price of 18 dollars per oz., would be worth 921,456 dollars. From the same authority we learn, that in 1818-20, the produce had fallen to an annual average of 428 kilogrammes; and in 1822, to 350 kilogrammes; that it afterwards rose, under the efforts of some English companies; but that, their efforts ceasing, and the growing of coffee, sugar, and tobacco, being found more profitable employment for slave-labour, the produce had again fallen off; and that since 1822, no trustworthy information as to its amount had been obtained in Europe. The quantities above stated relate only to the principal district, in which the earth was rich enough, over a large space, to make it worth while to apply government inspection somewhat closely. It is probable that the produce in the other and less important, though numerous, auriferous districts, has been better maintained, by the discovery of new deposits, as the old have been exhausted.

In the present state of our information, any estimate of the produce of the forty-five years in view must be little better than a mere guess. But, looking at all that is known of the early part of this period, and having some reliance (in the absence of more positive information) on an estimate lately framed by M. Chevalier, Professeur de l'Economie Politique at the College de France, stating the produce of gold in Brazil, at the date of the Californian discovery, in 1848, as probably amounting to 8,611,000 francs (say 1,721,000 dollars), I venture to estimate the produce of Brazil as follows:—

	Dollars.
For the 10 years, 1804-13, at an average of 3,000,000 dollars a-year ....	30,000,000
For the 8 years, 1814-21, at an average of 2,500,000 dollars a-year ....	20,000,000
In the 10 years, 1822-31, at an average of 2,000,000 dollars a-year ....	20,000,000
And for the 17 years, 1832-48, at an average of 1,500,000 dollars a-year	25,500,000
<b>Total</b> .....	<b>95,500,000</b>



## VII.—CENTRAL AMERICA AND UNITED STATES.

That some gold has, during the whole period in question, been raised in Central America, seems to be beyond doubt. The consul at Panama, writing in 1830, states the results of some very imperfect returns of the quantity that had paid the *quinto*, or government duty, from 1790 to 1810; and adds, that much of what is raised is suspected to be smuggled out of the country by the way of the Mosquito shore, in order to avoid both the *quinto* and an export duty. The quantity returned as having actually paid the *quinto*, in 1802-3-4, when the Spanish authority was undisturbed, exceeded an annual average of 45,000 castellanos, which, as each castellano was equal to 17 reals, makes about 95,600 dollars. It is not likely that this was nearly all that was collected: the whole being gold, and, as requiring scarcely any investment of capital in the work of production, very difficult to bring to account. It will probably be under the mark to set down the average produce of the forty-five years at 200,000 dollars a-year, making a total of 9,000,000 dollars (gold).

The accounts published by the mint of the United States lead to the conclusion that the entire quantity of gold raised in the (Southern) States, down to 1848, did not exceed 15,500,000 dollars.

The produce rose steadily from about 1814, when the first discoveries of importance were made, to 1833-4, when it reached upwards of 800,000 dollars a-year; but has since fallen off with scarcely less steadiness.

VIII.—BOTH AMERICAS: *General Summary of the forty-five Years 1804-48.*

	Silver.	Gold.
	Dollars.	Dollars.
Raised in Mexico .....	702,026,872	84,920,225
„ Peru .....	216,485,527	31,566,898
„ Buenos Ayres* .....	287,143,190	170,691,290
„ Chili .....	38,555,205	99,963,316
„ Colombia.....	170,000	204,255,328
„ Brazil .....	....	95,000,000
„ Central America .....	....	9,000,000
„ United States .....	....	15,500,000
Total, dollars .....	1,244,380,794	710,897,057
Sterling, at 4s. 2d. .... £	259,245,995	148,103,550

\* About two-thirds of the quantity of the precious metals set down for Buenos Ayres (the old Vice-royalty) is estimated entirely on the basis of the stated and supposed *exports* from the ports of Monte Video and Buenos Ayres, and so, *formally*, cannot be considered as so much *raised*. But the estimate is too wide to be materially affected by what might be retained for use in that region, and which is afterwards allowed for.

As to how much of this total quantity has come to Europe, I am disposed to offer the following conjecture, in continuance of that of Baron Humboldt, already referred to, as made in the first years of the present century.

It is tolerably certain that, since the expulsion of the Spaniards from Mexico and South America, the quantity of silver and gold held in use there has been very much reduced; but in the United States, and in Canada and the other British colonies, it must be considerably increased. I assume that the 153,000,000 dollars allowed by Humboldt for the quantity in use in all America may, in 1848, be supposed to have risen to 220,000,000, and to be chiefly in North America.

For the American consumption, we may allow  $\frac{3}{4}$  per cent. per annum on (say) an average stock of 200,000,000 dollars, which, for forty-five years, would amount to 67,500,000 dollars.

The quantity sent elsewhere than to Europe, allowing for the American trade with China, may well be supposed to have amounted to an average of at least 2,000,000 dollars a-year, or, for the forty-five years, a total of 90,000,000 dollars.

The quantity sent to Europe in the *forty-five years* 1804-48 may then be estimated as follows:—

	Dollars.
Consumed in America.....	67,500,000
Retained in use there, in addition to the quantity so retained in 1803....	67,000,000
Sent elsewhere than to Europe .....	90,000,000
	<hr/> 224,500,000
Or sterling, exchange at 4 <i>s.</i> 2 <i>d.</i> .....	£46,770,000
Say one-tenth part in value in Gold .....	£ 4,677,000
	<hr/>
Remains—Silver .....	£42,093,000

	Silver.	Gold.
	£	£
Quantities supposed to be raised in the 45 years, } 1804-48, as already shown .....	259,245,995	148,103,550
Deduct as above .....	42,093,000	4,677,000
	<hr/>	<hr/>
Probably sent to Europe, from America, in the } 45 years, 1804-48.....	217,152,995	143,426,550

From these figures, therefore, and the results which have been already obtained in the earlier parts of this paper, we obtain the following

*General Result.*

Gold and Silver—Quantity probably sent to Europe in the period	£
from 1492 to the end of 1803.....	1,122,997,475
Gold and Silver—The like quantity for the period of 45 years, 1804-48,	
as above .....	360,579,545
	<hr/>
	£ 1,483,577,020

The value of this general result cannot, if strict regard be had to the imperfect details on which it rests, be deemed great. But I trust I shall be enabled, in subsequent stages of the inquiry, of which the present paper is the first-fruit, to throw additional light upon this part of the subject from collateral sources of information.



*Expenditure in India on Public Works from 1837-8 to 1845-6, inclusive.* By LIEUT.-COLONEL W. H. SYKES, F.R.S.

[Read before the Statistical Society of London, 18th March, 1850.]

VERY indefinite ideas obtaining in Europe, with respect to the number and character of Public Works carried on in India, and with respect to the sums actually expended annually upon them at the different Presidencies, I have thought it right to have the following tables framed from the official records; an inspection of which will show, at a glance, not only the various works carried on, but the sums expended upon each class of works. It is necessary to premise that under the head of Embankments and Tanks, the original cost of prodigious works at the different Presidencies, amounting to millions sterling, is not included in the table; the expenditure under the head of Embankments and Tanks being, for the most part, an annual outlay for keeping these works in an efficient state of repair. The first year in the table, 1837-8, is the year of the preparations for the disastrous and expensive Affghan campaigns, which occasioned a loss to the State of several millions sterling, and embarrassed the Indian finances. Nevertheless, in that year 173,591*l.* were laid out on public works in India, and in the succeeding year, when the army was in Affghanistan, and great field equipments were maintained, 323,889*l.* were disbursed for works of peace, nearly a third of the sum being laid out at Madras, 40,000*l.* of it being upon roads and bridges. Even in the year 1841-2, when matters appeared with so sinister an aspect in Affghanistan, above 300,000*l.* were disbursed from the impoverished treasuries upon works of utility; 103,586*l.* in Bengal, 72,425*l.* in the N. W. Provinces, 83,979*l.* in Madras, and 40,852*l.* in Bombay. During the remaining years, though the finances were burthened by the cost of the military operations for the punishment of the Affghans; by the conquest of Scinde, which entailed an annual loss of nearly three quarters of a million sterling; and by the expenses of the Gwalior campaign and first Sikh war; in no year was a less sum than 200,000*l.* expended for public works; and during the nine years under review, 2,282,894*l.* were expended on peaceful objects, averaging 253,654*l.* sterling per annum,—these disbursements, in fact, being abstracted from the loans for carrying on the wars in Affghanistan, Scinde, Gwalior, and the Punjab. Subsequently to 1845-6 the second Sikh war took place, but the outlay for peaceful purposes has, nevertheless, continued; nearly a million sterling has been granted for the Ganges canal, now in rapid progress;—40,000*l.* or 50,000*l.* for works on the Gadavery river, and 5 per cent. interest has been guaranteed on very large sums to be devoted to railways. Another great work, the triangulation, geographical delineation, and revenue survey of India has been in constant progress for more than half a century—and upon this great object more than a million sterling must have been spent.

The canals in the north-west provinces consist of the Delhi canals, (Delhi and Feroz,) or the Western Jumna;—the Doab canal, or Eastern Jumna;—and the Ganges canal. The entire length of the Delhi canals is 425 miles, (Delhi 185, and Feroz 240,) and the cost 314,380*l.* to the 1st of May, 1844. The length of the Doab canal, or Eastern Jumna, is 135 miles, and the cost 169,842*l.*; and upon both canals.

since their restoration, a sum of 557,000*l.* has been laid out. These canals were originally established under the Mogul Emperors, but fell into a state of entire dilapidation and disuse. The Delhi canal was re-opened by the British Government in 1819, Feroz's in 1825, and the Doab in 1830. The Ganges canal, now in progress of execution, will run for 452 miles, from Hurdwar to Allahabad: the estimate by the longest line was 922,699*l.*, to which, in all probability, 50 per cent. may be added on the completion of the work. Recently, 150,000*l.* have been sanctioned for works upon the Kistna river.

It is also necessary to be noticed, that a large amount of labour on certain classes of public works is performed by convicts, and that the charge for their maintenance, though a real addition to the Government expenditure, does not appear in the following table. It is defrayed in the Judicial Department, and is not susceptible of being readily added to the other charges in a distinctive form.

For the public weal also, above 100,000*l.* have been spent in cotton experiments by the Government of India; and it has been most satisfactorily proved that not only cotton, with a staple suitable for the cotton machinery of England and the wants of the manufacturers, can be produced to a great extent, but it has also been proved by the sale prices in Liverpool and Manchester, that if European capital and private enterprise were engaged in the cultivation of cotton in certain parts of India, the returns would be remunerative to the speculator, and establish a basis of permanent security to the cotton manufacturing interest of Great Britain.

On the whole, although less may have been spent upon public works than India, with its area, population, and revenue, might fairly demand, and the governing bodies certainly desired; yet considering the untoward, although successful wars, and the consequent necessity for an annual increase to the public debt, a good deal has nevertheless been done with borrowed money; and the time is fast approaching when continued peace will leave a surplus revenue to be annually devoted to the extension of lines of communication, whether canal, rail, or road, and to other purposes for the *further* development of the acknowledged resources of India.

*Area and Population of British India.*

	Area in Square Miles.	Population.
Bengal—		
Lower Provinces .....	165,443	39,582,090
North-Western Provinces .....	71,985	23,199,668
British Territory under Supreme Government:		
Saugor and Nerbudda Territories .....	24,870	2,545,611
British Territory under Agra Government:		
Mairwara, Ajmeer, &c. ....	13,885	638,595
Madras .....	144,858	15,882,920
Bombay .....	119,822	9,297,507
	540,863	91,146,391*

\* Independently of Native States.



Year.	BENGAL.										NORTH-WEST PROVINCES.									
	Roads and Bridges.		Embankments.		Canals, &c.		Total.		Roads.		Bridges.		Canals.		Tanks, Wells, and Embankments.		Total.		Total.	
	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.
1837-38 ...	1,49,274	1 8	1,15,812	11 7	29,733	2 10	2,94,820	0 1	1,67,243	5 11	53,151	11 11	1,48,075	6 1	11,541	0 4	3,80,011	8 3		
1838-39 ...	1,39,232	11 4	1,29,759	0 6	70,119	6 2	3,39,111	2 0	11,45,083	9 0	78,148	3 5	2,84,215	10 8	11,158	0 2	15,18,605	7 3		
1839-40 ...	1,96,732	7 6	1,40,915	11 6	29,705	15 5	3,67,354	2 5	1,40,499	15 7	59,670	14 0	1,88,816	13 1	6,136	11 8	3,95,124	6 4		
1840-41 ...	2,56,096	2 9	1,45,626	12 1	35,449	12 3	4,37,172	11 1	4,21,039	2 6	46,147	0 5	3,00,859	0 6	5,605	14 3	7,73,641	1 8		
1841-42 ...	8,16,162	15 3	1,90,589	0 8	29,108	4 6	10,35,860	4 5	2,92,671	10 8	42,877	13 3	3,68,755	8 2	19,947	8 8	7,24,252	8 9		
1842-43 ...	3,39,400	5 3	2,24,506	0 7	36,020	7 5	5,99,926	13 3	3,36,635	3 4	72,369	4 10	2,42,422	0 7	97,500	1 5	7,48,926	10 2		
1843-44 ...	3,02,674	0 6	1,92,326	8 11	53,105	10 6	5,48,106	3 11	2,10,817	14 2	12,673	2 5	2,85,730	7 2	...	...	5,98,721	7 9		
1844-45 ...	4,46,894	4 3	1,71,987	8 8	41,490	12 11	6,59,372	9 10	2,18,139	2 10	72,574	9 1	2,87,413	3 4	3,774	6 5	6,11,901	4 8		
1845-46 ...	4,46,984	9 8	1,35,859	13 4	68,513	14 7	6,51,358	5 7	3,34,334	4 3	9,411	1 7	3,32,770	10 8	1,22,655	8 3	7,99,371	8 9		
	Total Rupees .....										Total Rupees .....									
	49,33,082										64,60,556									
	Average of 9 years Rupees ...										Average of 9 years Rupees ...									
	5,48,120										7,17,839									
Year.	MADRAS.										BOMBAY.									
	Tanks, Ware-houses, and other works connected with Irrigation.		Roads, Bridges, Ghauts, &c., &c.		Total.		Roads.		Bridges.		Tanks, Wells, Canals, &c., for the purposes of Irrigation.		Tanks, Wells, Canals, &c., for other purposes than Irrigation.		Total.		GRAND TOTAL.		Total.	
	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.
1837-38 ...	5,30,832	12 2	1,17,516	0 4½	6,48,348	12 6½	3,19,489	4 7	7,224	1 8	47,609	1 10	38,410	7 5	4,12,732	15 6	17,35,913	4 4½		
1838-39 ...	5,96,668	8 5½	4,00,665	14 6	9,97,334	6 11½	2,91,876	8 7	21,767	7 3	41,335	7 10	28,860	15 7	3,83,840	9 1	32,33,591	7 5½		
1839-40 ...	5,14,818	0 6½	3,01,558	15 8½	8,16,377	0 3	2,73,062	13 11	32,064	12 0	66,907	8 8	24,777	6 6	3,96,812	7 3	19,75,668	2 1		
1840-41 ...	6,25,013	3 10	4,19,412	6 3	10,44,425	10 1	3,03,354	4 4	70,421	4 8	39,474	2 0	15,610	11 6	4,23,860	6 6	26,84,099	13 4		
1841-42 ...	5,69,937	15 5	2,69,855	2 10	8,39,793	2 3	2,52,353	4 10	85,883	10 0	40,133	8 1	30,155	5 9	4,08,525	12 8	30,08,431	12 1		
1842-43 ...	5,30,845	7 11	4,56,532	8 7	9,87,378	0 6	2,33,065	1 7	32,701	6 10	42,701	6 10	11,413	7 8	2,99,557	11 4	26,35,789	3 3		
1843-44 ...	3,96,016	8 8	1,43,294	9 2	5,41,311	1 10	3,57,692	13 0	17,170	10 4	12,965	4 5	16,275	9 11	4,04,104	5 8	20,02,243	3 2		
1844-45 ...	6,09,687	13 2	1,46,034	13 6	7,55,722	10 8	4,19,330	6 10	6,640	7 1	36,142	11 11	33,050	15 11	4,95,164	9 9	25,23,161	3 11		
1845-46 ...	6,21,174	8 0	4,76,753	0 0	10,97,927	8 0	3,79,295	5 4	25,557	14 2	30,775	15 11	41,457	14 10	4,77,087	2 3	30,25,744	8 7		
	Total Rupees .....										Total Rupees .....									
	77,28,618										37,06,686									
	Average of 9 years Rupees ...										Average of 9 years Rupees ...									
	8,58,735										4,11,854									
	or at 2s. per Rupee, £253,654																			

*Embankments.*—This term includes works of two kinds:—1st. Sea Walls intended to guard against encroachment from the ocean. 2nd. Internal Bunds, or Banks, constructed by the side of rivers and canals, or across the streams, and designed either to protect the country from inundation, or to direct the water most beneficially for the purposes of irrigation.

*Contribution to the Vital Statistics of Scotland.* By JAMES STARK, M.D., F.R.S.E., *Fellow of the Royal College of Physicians of Edinburgh.*

[Read before the Statistical Society of London, 20th January, 1851.]

THERE is scarcely a state of Europe relative to whose Vital Statistics we know so little as that portion of the United Kingdom called Scotland. This is the more surprising, seeing that at one time the Established Church of Scotland had in operation a system of enrolment by which every marriage, birth, and death, was entered on the parochial register. In the case of the births, it was the impolitic exaction of a tax on registration, imposed in 1783, which so displeased the great mass of the population, that the dissenters, in a body, gave up the registration of the births of their children, and numerous friends of the Church followed their example. Though this impolitic tax was removed in 1794, the registration by these parties was not resumed, and since that period not a third of the births over Scotland have been entered on the parochial registers.

The registration of deaths (or of *burials*, as it is now termed), instead of being kept by the same parties who kept the registers of births and marriages, was generally handed over to an officer called the recorder, who in many of the country parishes was at the same time the grave-digger, and was remunerated by the dues exacted for opening the graves. The office, therefore, frequently fell into the hands of illiterate men, who either wrote with difficulty, or were unable to write, so that the records of burials were either imperfectly kept, or not at all.

The only registration-books which have been kept with anything approaching to accuracy, are those of the proclamations of the banns of marriage; and we are indebted for these, not to the maternal care of the Church, but to an Act of Parliament, which renders it penal for any clergyman to marry a couple without being certified by the production of the banns of marriage that the parties have been regularly proclaimed.

Every one, from this statement, may at once perceive that the chief reason of the defective state of the parochial registers in Scotland has been the want of a superior board, to which reports of all these matters ought to have been duly and regularly sent. Had the Church, when she undertook the duty of registration, appointed a committee to watch over this most important department, and forced all the kirk sessions and parochial clergy to make an annual report of the numbers born, dead, and married, within their respective parishes, we should at this moment have had a most valuable collection of documents in vital statistics. The evils which arise from the want of proper registers of births, deaths, and marriages, is felt through all classes of society; and in questions affecting succession, legitimacy, and even the attainment of situations in the Army or under Government, the greatest difficulty is often experienced to prove, not only the age, place of birth, or



parents of the living, but also to prove that parties now dead have ever existed.

When this evil began to be felt, it was the duty of the Church to have directed its attention to the improvement of the registration kept under their auspices; but they have not only not done this, but when very excellent Bills were brought before Parliament for the purpose of effecting a more uniform system of registration over Scotland, they were the parties who were the chief agents in obstructing these Bills in every stage of their progress, and finally succeeded in depriving Scotland of the benefits of registration, it is feared, for an indefinite period.

Seeing, therefore, there is no near prospect of getting more accurate facts relative to the Vital Statistics of this portion of Great Britain, I have been induced to collect from all available sources such facts as bore on this subject, and offer the following as the result of these investigations.

The sources of my information are various. A considerable proportion of the facts are derived from that voluminous and most instructive work, "The Statistical Account of Scotland," published in 1845, by the Messrs. Blackwood, of Edinburgh, under the superintendence of a Committee of the General Assembly of the Church of Scotland. The accounts of each parish were furnished by the clergy of the respective parishes, and embody an immense amount of instructive information. Much valuable matter has been derived from the Reports of the Board of Supervision for the Relief of the Poor in Scotland; from numerous Parliamentary papers; from Reports procured by the present Lord Advocate for Scotland, and kindly allowed to be shown to me by John C. Brodie, Esq., the present Crown Agent. Sir Andrew Halliday's pamphlets; the Bills of Mortality for Glasgow, drawn up by the late Dr. Watt, and now by Mr. Patrick; those of Paisley, drawn up by John Lorimer, Esq., Town Chamberlain; those of Dundee, drawn up by the Chamberlain, Wm. B. Baxter, Esq.; those of Greenock, drawn up by John Tuelon, Esq.; those of Aberdeen, Perth, Kilmarnock, &c., drawn up by myself, from materials furnished to me by the Recorders of the different burying-grounds connected with these towns; those of Edinburgh and Leith, drawn up by myself, and published monthly, quarterly, and annually; the Reports of the British Association on the Vital Statistics of five of the chief towns in Scotland; have all furnished more or less information relative to the subject of this paper. Numerous other works have been consulted for the purpose of comparing the results in Scotland with those furnished by England, Ireland, and other countries; but these it is unnecessary to particularise, as they will be afterwards referred to.

The facts gathered from these various sources of information are condensed in the following paper, so as to give, in so far as practicable, a tolerable view of the condition of the population of Scotland on many interesting points.

#### I.—*Insane and Idiots.*

Many interesting problems hang on ascertaining the number of insane and idiots in a country. The number of the insane in Scotland has been several times attempted to be estimated. In 1812, the then

Lord Advocate procured returns from all the sheriffs of counties, by which it appeared that there were—

In jails .....	11	Lunatics.
In public madhouses.....	250	„
In private madhouses .....	100	„
Under care of friends .....	12	„
<hr/>		
Total .....	373	„

As it was apparent, even on the most superficial inspection, that this number was greatly underrated, Sir Andrew Halliday, in 1816, with the able assistance of the late Principal Baird of the Edinburgh University, drew up a series of queries, which were distributed among the clergy of Scotland, and out of the 992 parishes, he procured returns from 85. Seven of these parishes contained no insane persons; the remaining 78 parishes returned—

Lunatics in confinement .....	137
Idiots at large.....	250
<hr/>	
Total .....	387

Unfortunately, no note was taken of the population of these parishes. Sir A. Halliday and Principal Baird, therefore, assumed that all the parishes of Scotland were equal in this respect, and reckoning the total population to amount to 1,600,000 souls, arrived at the conclusion that at that period Scotland must have contained 4,500 insane and idiots, in the relative proportions of one lunatic to two idiots.

In 1829, Sir Andrew Halliday, in his letter to Lord Seymour, on the number of lunatics in England and Wales, corrected the above statement, and brought down the returns to the year 1821. He then stated that the corrected returns showed the probable number of insane and idiots in Scotland to be only 3,652 in that year, out of the total population of 2,093,436, being in the proportion of 1 deranged person to every 574 of the general population. No new facts, however, were given on which this corrected estimate was founded, so that we are left quite in the dark as to the principles which guided him in his corrections.

The last census of the population took no note, or at least published no abstract, so far as I am aware, of the number of the insane at large in the different parishes of Scotland. The number of the insane in confinement in the different public lunatic asylums was, however, given in the Occupation Abstract; but as it is well known that these merely included the cases requiring present restraint, from their being dangerous to the community, and did not include those in private madhouses, it is apparent that their numbers give no just idea of the proportion of insane actually existing in the population. The numbers returned as being confined in the public lunatic asylums were 1,325 persons, being in the proportion of 1 insane person in confinement out of every 1,977 of the general population.

That this number was much below the real number of insane among the population, appeared very evident from the returns made by



the parochial clergy, and published in the "Statistical Account of Scotland." I have carefully extracted from that voluminous work the important information on this head, and offer two tables as the result of this examination.

It will be seen from Tables I. and IV., that of the 996 parishes into which Scotland is divided, 164 returned the number of the insane as distinguished from the fatuous, and 211 returned the number of the fatuous as distinguished from the insane. As the number of the population in each parish was at the same time given, the accompanying tables exhibit the proportionate population in each parish and county for each of these classes, and thus render the facts stated available for exact comparison.

A few observations will be offered on each head separately.

TABLE I.

*Showing the Number of Insane in 164 Parishes, and their Proportion to the Population.*

Counties.	Number of Parishes.	Population.	Number of Insane.	Proportion.
Edinburgh .....	9	25,947	29	1 in 894
Linlithgow .....	....	....	....	....
Haddington .....	5	10,711	6	„ 1,785
Berwick .....	8	13,217	18	„ 734
Roxburgh .....	4	4,741	4	„ 1,185
Peebles .....	1	629	2	„ 314
Selkirk .....	1	1,222	1	„ 1,222
Dumfries .....	5	17,985	15	„ 1,199
Kirkcudbright .....	3	6,706	7	„ 958
Wigton .....	3	5,994	14	„ 428
Ayr .....	10	27,460	12	„ 2,288
Bute .....	1	3,771	2	„ 1,885
Lanark .....	3	11,188	9	„ 1,235
Renfrew .....	2	9,659	12	„ 805
Argyll .....	6	21,417	30	„ 713
Dumbarton .....	1	3,090	4	„ 772
Stirling .....	4	14,917	12	„ 1,243
Clackmannan .....	1	5,159	3	„ 1,719
Kinross .....	1	1,108	3	„ 369
Fife .....	10	26,156	25	„ 1,046
Perth .....	20	39,988	54	„ 740
Forfar .....	8	11,594	19	„ 610
Kincardine .....	6	10,600	16	„ 642
Aberdeen .....	15	31,369	39	„ 804
Banff .....	10	24,909	22	„ 1,132
Elgin .....	4	7,760	14	„ 554
Nairn .....	1	1,457	4	„ 364
Inverness .....	3	11,011	17	„ 647
Ross and Cromarty....	5	11,011	17	„ 647
Sutherland .....	5	9,768	12	„ 816
Caithness .....	3	9,931	6	„ 1,655
Orkney .....	5	7,590	12	„ 632
Shetland .....	1	1,678	2	„ 839
	164	389,743	342	1 in 1,139

A.—*Insane or Lunatic.*

By Table I. it is seen, that in 164 parishes, embracing a population of 389,743 souls, 343 persons were returned as insane, being in the proportion of 1 insane person in every 1,139 of the population. If the like proportion of lunatics existed over Scotland then, instead of 1,325 lunatics, as returned by the census of 1841, Scotland at that period would have contained no fewer than 2,299 lunatics in her population of 2,620,184 souls.

The above conclusion as to the probable number of insane in the population of Scotland is singularly confirmed by several important documents which were kindly shown to me by John C. Brodie, Esq., W.S., Crown Agent for Scotland. When the present Lord Advocate was preparing his Lunacy Bill, he procured returns from all the public and private asylums and madhouses in Scotland, of the number of patients in these establishments, and whether they were private or pauper-patients. He also, at the same time, through the Board of Supervision for the Relief of the Poor, procured the number of pauper lunatics receiving parochial aid. Table II., compiled from one of these documents, exhibits the number of private and pauper lunatics in confinement in the public and private madhouses of Scotland in the year 1847.

TABLE II.

*Showing the Number of Private and Pauper Lunatics confined in Public Asylums or Private Madhouses in Scotland in 1847.*

	Lunatics.		
	Private.	Pauper.	Total.
<i>In Public Asylums</i>			
In Aberdeenshire .....	45	165	210
„ Edinburghshire .....	123	344	467
„ Elginshire .....	....	30	30
„ Forfarshire.....	84	252	336
„ Inverness-shire .....	....	10	10
„ Lanarkshire .....	157	388	545
„ Perthshire .....	74	90	164
<i>In Private Licensed Madhouses</i>			
In Aberdeenshire .....	15	....	15
„ Buteshire .....	2	....	2
„ Dumfriesshire .....	64	66	130
„ Edinburghshire .....	167	92	259
„ Forfarshire.....	2	....	2
„ Lanarkshire .....	47	70	117
„ Linlithgowshire .....	1	....	1
„ Renfrewshire .....	17	112	129
	798	1,619	2,417

By this table, it appears that the total number of lunatics requiring confinement in 1847 was 2,417, and allowing that the population increased, from 1841, in the same ratio as it did from 1831 to 1841, the population of Scotland that year would amount to 2,781,683 souls,



giving a proportion of 1 insane person in confinement out of every 1,150 of the general population.

As there are always in the population several cases of insanity which ought to be in confinement, yet are not, and as these cases are enumerated in the returns of the clergy, but of course are not in the Lord Advocate's returns, it may be very safely assumed that the proportions returned by the clergy are the correct ones, and are as near the truth as it is possible, with our present data, to attain.

Let us then for a moment inquire whether the proportion of insane in Scotland exceeds or falls below that of England or Ireland.

Notwithstanding the existence of a Poor-Law Board, and a Board of Commissioners in Lunacy, in England, and the annual publication of reports by these, it is by no means an easy matter to spell out from these two documents the absolute number of lunatics in England and Wales. The numbers given by each Board do not agree with each other, and vary still more from those documents now and then called for by the House of Commons. By a Return made by order to the House of Commons, on 22nd June, 1847, it appeared, that in England and Wales, there were of lunatics confined—

In county lunatic asylums, hospitals, &c. ....	5,142
In licensed madhouses .....	3,761

---

Total lunatics in England and Wales .... 8,903

or 1 lunatic in confinement out of every 1,786 of the general population.

By a close comparison, however, of the Poor-Law Commissioners' Reports with those of the Commissioners in Lunacy, it appears that the absolute number of lunatics in confinement over England and Wales is nearly double what that official document shows it to be, and is made up as follows:—

In county lunatic asylums, hospitals, and licensed houses } in England .....	13,826
Ditto, in Wales .....	163
Bethlem and naval and military hospitals.....	606
In jails .....	32
Found lunatic by inquisition.....	307
Single patients in private houses .....	130
Total lunatics in confinement over England and Wales.....	15,064
Of this number there were, paupers .....	11,067
Private patients.....	3,997

Allowing for increase of population, which in 1847 would have amounted to a total of 16,885,324 souls, the above numbers would yield a proportion of 1 insane person in England and Wales out of every 1,120 of the general population—a proportion slightly greater than that of Scotland.

From the official Reports of the Inspectors of the Lunatic Asylums in Ireland for 1848, published by command of Her Majesty, in 1849, it appears, that in a population of 8,175,124 souls, there were only 3,738 insane persons requiring to be confined in public lunatic asylums,

or in private madhouses or jails, being in the small proportion of 1 insane person in Ireland out of every 2,187 individuals of the general population. This result is the more curious, seeing that the great proportion of the Irish are Celts—the very same race as the highlanders of Scotland, among whom insanity is so much more frequent. The probable cause of this will be adverted to afterwards.

To return to Scotland, it may be remarked, that, large as the above estimate is, I am still inclined to consider it as below the truth, even though the returns procured by the Lord Advocate, and the deductions from the facts recorded in the “Statistical Account of Scotland,” agree so closely. This opinion is principally founded on the returns made by some of the clergy of the Church of Scotland, and published in the “Statistical Account,” in which more care has been taken to procure accurate returns, and fuller details are given. To show that such an opinion has some foundation in fact, I have exhibited in the following table a few of the parishes in which the proportion of insane is more than double the average for Scotland. The list could have been more than quadrupled; but the subjoined will serve to show the general bearing on the question:—

TABLE III.

*Showing the Number of the Insane and their Proportion to the Population in a few Parishes of Scotland.*

Name of Parish.	Population.	Number of Insane.	Proportion.
Pennicuick, Edinburghshire .....	2,255	5	1 in 451
Gordon, Berwickshire.....	882	3	„ 294
Coldstream, do. ....	2,801	6	„ 466
Traquair, Peeblesshire .....	629	2	„ 314
Cummertrees, Dumfriesshire .....	1,407	4	„ 352
Kirkcolm, Wigton .....	426	9	„ 47
Ardnamurchan, Argyll .....	3,311	8	„ 414
Island of Tiree, Argyll Coast.....	4,687	8	„ 586
Island of Coll, do. ....	1,409	4	„ 352
Campbelton, Argyll .....	9,539	16	„ 596
Portmoak, Kinross .....	1,108	3	„ 369
Kenmore, Perthshire .....	3,126	7	„ 446
Killin, do. ....	1,707	7	„ 244
Kilmorach, Inverness .....	2,201	14	„ 157
Avoch, Ross-shire .....	1,936	9	„ 215

In so far, then, as the lunatics are concerned, the sister countries stand to each other in the following relations:—

Ireland, one lunatic in every	2,187 inhabitants.
Scotland, „	1,139 „
England, „	1,120 „

B.—*Fatuous Persons, Idiots.*

By Table IV. it is seen, that in 211 parishes of Scotland, embracing a population of 467,921 souls, 805 were returned as labouring under fatuity. This gives a proportion of 1 idiot or fatuous person in every 581 of the general population. If the like proportion of idiots existed



over Scotland, then, according to the amount of the population in 1841, there would have been 4,486 idiots in Scotland that year. This number, large as it may seem, does not, I fear, fairly represent the total numbers actually existing, seeing that many of the clergy, in making their returns, appear to have attached a limited meaning to the word *fatuous* (the word used in the queries submitted to them), and did not include therein the harmless idiot and imbecile—*silly* persons, as they are termed in Scotland. Thus one clergyman remarks, “Our population comprehends three insane and six *fatuous*, *besides several of marked weakness of intellect*.”—“Statistical Account,” vol. 13, p. 231. Another observes, “One insane (a man) is in the asylum; there are two *fatuous*, and six of both sexes *idiots or quite silly*” (vol. 10, 410). Another says, “There is one person *fatuous*, one insane, two *imbecile*, and two blind” (vol. 5, 411).

TABLE IV.

*Showing the Number of Fatuous Persons in 211 Parishes, and their Proportion to the Population.*

Counties.	Parishes.	Population.	Fatuous.	Proportion.
Edinburgh .....	7	17,260	44	1 in 390
Linlithgow .....	....	....	....	....
Haddington .....	4	9,206	18	„ 511
Berwick .....	6	6,384	14	„ 456
Roxburgh .....	3	4,280	9	„ 475
Peebles .....	3	2,066	5	„ 413
Selkirk .....	1	1,221	3	„ 407
Dumfries .....	10	26,074	39	„ 668
Kirkcudbright .....	5	8,603	16	„ 537
Wigton .....	8	18,505	34	„ 544
Ayr .....	14	40,254	36	„ 1,118
Bute .....	2	4,611	6	„ 768
Lanark .....	10	24,280	39	„ 622
Renfrew .....	4	17,513	13	„ 1,347
Argyll .....	8	20,650	40	„ 516
Dumbarton .....	2	4,261	6	„ 710
Stirling .....	5	17,657	14	„ 1,261
Clackmannan .....	1	5,159	3	„ 1,719
Kinross .....	2	4,116	3	„ 1,372
Fife .....	15	36,307	47	„ 772
Perth .....	20	33,788	87	„ 388
Forfar .....	10	19,280	43	„ 449
Kincardine .....	8	12,798	27	„ 474
Aberdeen .....	16	26,831	42	„ 638
Banff .....	9	23,686	34	„ 696
Elgin .....	4	5,058	8	„ 632
Nairn .....	1	1,177	2	„ 588
Inverness .....	7	19,158	36	„ 532
Ross and Cromarty....	8	17,316	46	„ 376
Sutherland .....	6	11,241	24	„ 468
Caithness .....	3	15,030	37	„ 556
Orkney .....	6	8,443	26	„ 324
Shetland .....	3	5,708	16	„ 356
	211	467,921	805	1 in 581

The following table exhibits a few of the parishes in which the number of fatuous persons is more than double that of the average of Scotland :—

TABLE V.

*Showing the Number of Idiots and their Proportion to the Population in a few Parishes of Scotland.*

Parish.	Population.	Fatuous.	Proportion.
Latheron, Caithness .....	8,000	20	1 in 400
Traquair, Peebles .....	629	2	„ 314
Bertram Shotts, Lanark .....	3,750	12	„ 312
Islands of Canna and Gigha, Argyll....	550	2	„ 275
Brechin, Forfarshire .....	6,508	24	„ 271
Comrie, Perthshire .....	2,622	10	„ 262
Stromness, Orkney .....	2,139	10	„ 214
West Kilbride, Ayr.....	1,684	8	„ 210
Kingarth, Bute .....	840	4	„ 210
Westruther, Berwick .....	870	4	„ 217
Bowden, Roxburgh.....	1,010	5	„ 202
Dalkeith, Edinburgh .....	5,853	30	„ 195
Kintail, Ross .....	1,240	7	„ 177
Stromness, Sutherland .....	1,153	10	„ 115
Sandsting and Aithsting, Shetland ....	2,177	12	„ 181
Meikle, Perth .....	873	8	„ 109
Humbie, Haddington .....	875	10	„ 87
Kirkcolm, Wigton .....	426	5	„ 85

The returns procured by the Lord Advocate, and the Reports of the Board of Supervision for the Relief of the Poor in Scotland, furnish us with some additional facts relative to the fatuous. These returns, however, do not include the whole number of such persons in Scotland, but only of those receiving parochial aid, and in this respect differ essentially from the returns relative to the lunatics.

The harmless idiot or imbecile, though unable to labour profitably, is by many, even of the lowest classes, supported at home without parish aid. All such cases, and they are, without doubt, the majority, are not returned in the Reports of the Board of Supervision; but with regard to lunatics, the case is different; being dangerous to society, they cannot be kept at home, excepting in a few rare cases. The returns, therefore, from all the public and private madhouses will give a very near approximation to the total number of lunatics in a population; but the pauper returns of the number of fatuous persons or idiots must always be much below the truth.

This is rendered apparent by the Board of Supervision's returns of the number of fatuous persons receiving parochial aid in 1847 and 1848. By the Third Report of that Board, it appeared that 1,960 fatuous persons or idiots were receiving parish relief over Scotland during 1847, all of which number were so harmless, that they were boarded with friends or others. As the table which is appended to that Report did not distinguish between insane and fatuous persons, but included all of unsound mind who were in the receipt of parochial aid, it is unnecessary to refer to it more in detail. It is, however, appended in Table VI., in order to complete the facts on this important



head of inquiry. This table possesses the additional advantage of giving the sexes of the deranged, by which it appears that the proportion of females exceeds that of the males by a proportion somewhat greater than could be accounted for by the excess of females in the general population.

TABLE VI.

*Showing the Number and Distribution in the Counties of Scotland of the Pauper Lunatics and Idiots for the Year ending May, 1849.*

Counties.	Population, 1841.	Number of Insane and Fatuous Persons.		
		Males.	Females.	Total.
Edinburgh .....	225,276	250	321	571
Linlithgow .....	27,466	19	17	36
Haddington .....	35,835	44	37	81
Berwick .....	34,345	23	31	54
Roxburgh .....	46,271	42	42	84
Peebles.....	10,558	3	3	6
Selkirk.....	7,413	4	6	10
Dumfries.....	72,855	39	52	91
Kirkcudbright .....	41,119	30	30	60
Wigton .....	39,195	32	33	65
Ayr .....	164,477	76	71	147
Bute.....	15,740	6	8	14
Lanark.....	427,738	217	212	429
Renfrew .....	154,160	81	95	176
Argyll .....	96,824	59	72	131
Dumbarton .....	46,005	21	17	38
Stirling .....	80,535	36	37	73
Clackmannan .....	20,041	5	14	19
Kinross .....	7,834	3	5	8
Fife .....	139,729	79	86	165
Perth .....	137,854	128	102	230
Forfar .....	170,395	116	128	244
Kincardine .....	33,550	24	28	52
Aberdeen.....	192,893	119	112	231
Banff .....	48,463	27	62	89
Elgin, or Moray .....	35,879	31	38	69
Nairn .....	7,186	3	12	15
Inverness.....	98,417	50	48	98
Ross and Cromarty....	79,941	50	56	106
Sutherland .....	23,715	23	23	46
Caithness.....	37,410	37	32	69
Orkney .....	30,507	17	29	46
Shetland .....	30,558	11	10	21
	2,620,184	1,705	1,869	3,574

It may prove interesting to inquire whether the sister countries of England and Ireland contain a larger or smaller proportion of fatuous persons in their population.

Both England and Ireland labour under greater disadvantages than Scotland with regard to ascertaining the probable number of idiots or fatuous persons. The sole returns on this head which they possess are the numbers of the fatuous poor receiving parish aid.

By the Reports of the Commissioners in Lunacy for England and

Wales, it appears that all the deranged persons confined in workhouses are in the condition of fatuous persons or helpless idiots. By combining the information furnished in their Third Annual Report, and in their "Further Report," it appears that the number of fatuous paupers stands thus:—

	Idiots.
In poor law union workhouses and single parishes, &c., under late Act...	8,986
In unions under Gilbert's Act .....	176
Calculated excess of pauper idiots in workhouses above those returned by the parish officers .....	3,053

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Total in England and Wales in 1847-8 receiving parochial relief .... 12,215

Allowing for increase of population, and estimating the total inhabitants of England and Wales to have been 16,885,324 in 1847, the above numbers give the proportion of 1 pauper idiot in every 1,382 persons. We should be quite safe in reckoning the absolute number of idiots in England and Wales at double the above numbers, so as to include all classes, and thus calculate the proportion of idiots over the country to be 1 idiot in every 691 inhabitants. This, however, in the present state of our knowledge, must be a mere guess, which it is to be hoped the approaching census will enable us to correct.

In Ireland, again, the Lunacy Reports mention very different numbers of idiots as existing in that country from what the Poor-Law Commission Reports do. By the Lunacy Commission Reports we find that there were in workhouses in 1848 no fewer than 1,943 fatuous persons; while by the Poor-Law Commission's Reports we learn, that during the same year, there were relieved of *out-door lunatics*, as they are termed, 2,745 persons. The explanation which is appended to this term (*out-door lunatic*), shows that it is pauper idiots not requiring confinement that is meant. These numbers make a total of 4,688 pauper idiots receiving parochial aid during the year 1848; and as it is very questionable whether the population of that unhappy country has made any increase since 1841, the proportion of pauper idiots in her population would amount to 1 in every 1,743 inhabitants. The Lunacy Commissioners, however, report that they have received returns from the Constabulary, which show that at least 6,000 fatuous persons (*insane*, they are termed) wander about the country. As the greater portion of these parties, however, are shown, by the Poor-Law returns, not to apply for relief, they must be left out of the calculation, if we compare the number of idiots receiving relief in the three sister countries.

As above observed, Scotland contained only 1,960 pauper idiots receiving parochial aid in 1847, which, in its calculated population for that year, of 2,781,683 souls, would give a proportion of 1 pauper idiot in every 1,419 inhabitants.

In so far, therefore, as the pauper fatuous persons are concerned, the three sister countries would stand to each other in the following relations:—

England, one pauper idiot in every	1,382	inhabitants.
Scotland,	1,419	„
Ireland,	1,743	„



This is the whole extent to which the comparison can be carried at present; but it is much to be desired that the approaching census should take an accurate note of the number of the insane and fatuous over the kingdom, and thus enable us to ascertain with some approach to accuracy the proportion of the population affected with these distressing maladies.

Before leaving this subject, it is of some importance to note the proportion of the sexes affected with lunacy and idiocy, as this has some important bearings on the theory of the cause or origin of the disease. According to returns from eight of the public lunatic asylums in Scotland, it appears that of 6,528 patients admitted during a series of years, 3,493 were males, and 3,035 females, showing that in Scotland males were one-seventh more prone to lunacy than females, supposing the proportion of the sexes in the population was equal.

In England, on the other hand, we find, that of 10,429 insane persons, 4,499 were males, and 5,930 females, showing that, in England, females were one-fourth more prone to lunacy than males.

In Ireland, however, the number of insane males exceeds that of insane females, though the proportions are more equal than either England or Scotland. Thus, of 3,738 lunatics, 1,940 were males, and 1,798 females, showing that males, in Ireland, were one-fourteenth more prone to lunacy than females. Let us glance, then, for a moment, at the probable cause of this great prevalence of disordered intellect in Scotland and the sister kingdom, with the view of ascertaining how far the facts adduced throw light on this recondite subject of inquiry.

Esquirol, Quetelet, and others, while holding the opinion that "idiocy is dependent on soil and on material influences," also hold that "insanity is the product of society and of moral and intellectual influences." By this they mean, that insanity is a disease which attends and increases with civilization, and is most prevalent in those countries where the moral and intellectual faculties are most highly developed. Idiocy, on the other hand, they regard as being produced by residence in a high and mountainous locality, in fact, as being attributable to *situation*, as much as they hold cretinism and goitre to be.

Correct statistics are the best means of proving the falsity or truth of any theory; and, unfortunately for both the above theories, the statistics of insanity and of fatuity in England and Scotland lend no countenance whatever to them. Did insanity prevail most among those in the highest stage of civilization—among those whose moral and intellectual faculties were most strongly exercised, it would prevail most extensively among the upper and middle classes of society. The very reverse of this, however, is observed in every country of which correct statistics are kept. In Scotland, of 2,417 lunatics in 1847, no fewer than 1,619 belonged to the class of paupers, while only 798 belonged to the upper and middle classes of society. In England, of 15,064 lunatics, in 1847, no fewer than 11,067 were paupers, while only 3,997 persons were the quota furnished by all classes of society above the condition of paupers.

The theory, therefore, which endeavours to account for the greater prevalence of insanity on the supposition of its connection with civilization, or with the greater development of the moral and intellectual

faculties, is utterly baseless, seeing that these very carefully-collected statistics demonstrate that *insanity is least prevalent among those whose intellectual attainments and civilization is highest.*

But the same conclusion is arrived at from an examination of the facts still more minutely. If the greater development of the intellectual faculties had anything to do with the production of insanity, not only would that disease prevail most among the upper classes of society, but it would be out of all proportion most common among the male sex. What shall we say then to the fact that, in England, one-fourth more females are affected with that disease than males. Nay, even Quetelet's own figures prove, that over all the world, as a whole, females are affected in greater numbers than males.

Table I. is, however, one of the most satisfactory refutations of Esquirol's and Quetelet's theory which could be produced. Let the counties in which the population is in the highest state of civilization and in the highest stage of moral and intellectual attainment be picked out, and arranged on one side, and those in which the inhabitants are in the lowest stage of civilization and in the lowest state of moral and intellectual attainment, be arranged on the other, and it will be found, that while the average of the most civilized counties yields only about one insane person in every 1,200 or 1,300 individuals, the barbarian counties yield a proportion of one insane in every 700 or 800 persons. In fact, had cultivation of intellect anything to do with the development or non-development of insanity, the converse of Esquirol's theory might be asserted to be the correct one, viz., that the more uncultivated the intellect, the more dormant the faculties, and the more unbalanced the passions by the restraints of high civilization, the more prevalent would be insanity.

I am far, however, from believing that either one or other is the cause of insanity, though I grant readily that poverty, privations, and an untrained and unbalanced mind, will act as powerful adjuvants in exciting a disease to which a tendency is given from any cause.

Again, with regard to the theory of soil and material influences favouring the production of idiocy, it is at once granted that, on a *primâ facie* view, such a theory appears, so far at least, to explain the prevalence of cretinism and idiocy in Switzerland. But to Scotland, England, or Ireland, this theory appears to be no more applicable than the former one relative to the insane. Did soil favour its development, or produce it, the proportion of idiots ought to be vastly greater on the high primitive mountain ranges of Aberdeenshire than on the low-lying red sandstone formations of Orkney and Shetland, or than in the volcanic or trap Western Islands. Did height above the level of the sea produce idiocy, it ought to be more prevalent on the high mountain ranges than on the sea coasts or low-lying islands around Scotland. But not only is it not so, but, if we are to judge from the relative proportion of *pauper idiots*, low-lying or level England yields a greater proportion than mountainous Scotland; and the almost level northern islands of Scotland yield a greater proportion of idiots than the interior hilly and mountainous regions. A reference to Table IV. will show these facts relative to Scotland, and will serve to satisfy the most bigoted defender of Esquirol's theory, that no theory of soil, climate, height, or material influences, will account for the now known



facts relative to the prevalence and proportion of idiocy in the various counties of England, Scotland, and Ireland.

As a general fact, with regard to Scotland, it may be stated, that idiocy appears to be nearly equally prevalent among the three distinct races met with in different parts of the island, viz., the Saxons and Normans in the low countries, the Celts in the Highlands and Western Islands, and the Danes and Norwegians, or Scandinavians, in Caithness and in the Orkney and Shetland Islands. Generally speaking, too, it may be said to be equally prevalent in the hilly regions as in the plains and islands; equally prevalent over every geological formation, the primitive districts of Aberdeenshire, &c., the coal measures of Berwick, Edinburgh, &c., the old red sandstone districts of Orkney and Shetland, and the trap districts of Peebles and the border counties.

Whatever, therefore, the proximate cause of idiocy, and, it may be added, of insanity, be, it must be one which is NOT dependent on climate, on soil, on exposure, on geological formation of the surface, nor on race. What then is most likely to be the proximate cause of insanity? What cause will account for the much greater prevalence of insanity in Scotland and England, than in Ireland or most other countries of the globe?

In the endeavour to solve this question, I shall limit myself to Scotland, believing that the same agencies are at work in England, but knowing too little of the internal economy of it to speak of it in the same positive manner in which I can speak of my native country. There is one peculiarity in the social condition of the people of Scotland which appears to me to be quite adequate to explain the excessive tendency to insanity and idiocy among its population, that is, the prevalence of the intermarriage of blood-relatives. This prevails in Scotland, and, I have reason to believe, in England and Wales also, to an extent greater perhaps than among the inhabitants of any other known country. This circumstance, or *fact* rather, has been repeatedly alluded to by the clergy in the accounts of their parishes, published in the "Statistical Account of Scotland," and is mentioned as one of the remarkable features of the Scottish character. Thus one clergyman remarks, "They are all so closely connected by blood-relationship and intermarriage, that they are all near relatives of one another" (vol. 7, p. 245). Another, struck by the same fact, says, "The intermarriages which have taken place among them have formed them into an extended community of blood relations" (vol. 10, p. 436). &c., &c.

Now it is a known fact, with which every medical practitioner must be conversant, that the children resulting from the intermarriage of near blood relatives are not only much more delicate, and more liable to scrofulous and brain diseases, than other children, but are also much more frequently born idiotic, blind, deaf, or dumb. In my own limited experience, I have several times had this painful fact brought under my notice, and have no doubt of its general truth. The breeders of our domestic animals know well this fact, and consequently avoid breeding in and in, as it is termed, in consequence of its pernicious effects on the progeny. Can we, therefore, hesitate to believe that the delicacy of organization which is the natural result of such unions should manifest itself in the production of a larger number of idiots at

birth or during childhood, and a greater tendency to insanity, on any exciting cause, in riper years, than in those countries where such intermarriages are not so prevalent?

Supposing, then, that this is the proximate cause of the prevalence of mental derangement in a community, what an apparently simple explanation does it afford of the presumed greater prevalence of insanity and idiocy in Scotland, than in Ireland or the continental countries of Europe! In Roman Catholic countries, cousin-marriages are discountenanced by the Church, and as they require a dispensation, are comparatively rare. In Protestant countries, on the other hand, the Church throws no barrier in the way of such marriages, and, consequently, over the length and breadth of Britain, but especially in Scotland, of which I can speak more confidently, cousin-marriages are extremely common.

As the only circumstance, therefore, which is common to the different races existing over Scotland and England, is the frequency of the intermarriage of near blood relatives, and as this cause can be traced in numerous instances to give rise to the production of mental derangement, I am inclined to regard it as the most likely proximate cause of idiocy at birth, of fatuity from the effects of brain diseases in childhood, and of insanity in riper years.

Even the few facts known with regard to Roman Catholic Ireland go to support the theory now started, and the greatly lesser prevalence of mental alienation among the natives of most of the different states of Europe goes far to support my views.

Now that England is favoured with a Registration Act, and thus possesses the means of acquiring distinct information on all points connected with the movement of the population, I would take leave to suggest to the Registrar-General the desirability of adding one more query to the marriage schedule, viz., "*What relation (if any) the parties are to each other?*" The information could be thus easily acquired, and we should have it in our power to ascertain by correct statistical data what proportion of the population enter into such unions.

## II.—*Deaf and Dumb.*

There are few countries relative to which we have returns of the number of deaf and dumb. Yet this is an important element in the population, especially when taken in connection with the numbers labouring under mental derangement, seeing that the same general causes which give rise to the production of the one, also cause the other. The whole particulars I have been able to collect relative to the number of deaf and dumb in Scotland have been gathered from the Reports in the "*Statistical Account of Scotland*," and are expressed in Table VII.

From this table it appears, that 161 parishes, embracing a population of 443,721 souls, contained 397 deaf and dumb persons, or 1 to every 1,117 inhabitants. It will be seen, by a reference to Table I., that this is a proportion slightly greater than the number of insane. If the other parishes in Scotland, which made no returns as to the number of the deaf and dumb, contained an equal proportion to their population, the number of deaf and dumb in Scotland in 1841 would have amounted to 2,344.



TABLE VII.

*Showing the Number of Deaf and Dumb, and the Population in 161 Parishes in Scotland.*

Counties.	Parishes.	Population.	Deaf and Dumb.
Edinburgh .....	6	15,661	13
Linlithgow .....	....	....	....
Haddington .....	4	9,921	6
Berwick .....	8	12,625	8
Roxburgh .....	3	4,280	5
Peebles .....	2	1,708	3
Selkirk .....	....	....	....
Dumfries .....	7	20,341	15
Kirkcudbright .....	1	2,697	1
Wigton .....	5	10,579	15
Ayr .....	13	37,188	20
Bute .....	2	4,611	2
Lanark .....	7	18,257	12
Renfrew .....	3	16,513	16
Argyll .....	7	14,705	21
Dumbarton .....	2	4,261	8
Stirling .....	4	18,294	13
Clackmannan .....	1	5,159	2
Kinross .....	3	7,043	8
Fife .....	14	58,254	38
Perth .....	14	53,939	47
Forfar .....	7	21,393	21
Kincardine .....	6	10,133	11
Aberdeen .....	10	16,672	20
Banff .....	5	13,634	8
Elgin .....	2	5,029	3
Nairn .....	....	....	....
Inverness .....	4	14,956	14
Ross and Cromarty .....	7	16,697	21
Sutherland .....	6	11,241	11
Caithness .....	3	9,931	20
Orkney .....	3	5,144	12
Shetland .....	2	3,855	3
	161	443,721	397

Excepting Prussia, Saxony, and the United States of America, I know of no country which has published returns of the number of deaf and dumb in its population.

In 1840, Prussia, in its population of 14,928,501, contained 11,075 deaf and dumb persons, or 1 such person in every 1,347 inhabitants.

Saxony, in 1840, in its population of 1,108,147, contained 1,172 deaf and dumb persons, or 1 such person in every 945 inhabitants.

The United States of America, in 1840, in her population of 17,068,666, contained 6,682 deaf and dumb persons, or 1 such in every 2,554 inhabitants.

We thus see that Scotland appears to contain a larger proportion of deaf and dumb than either Prussia or America, but a smaller proportion than Saxony.

III.—*Blind.*

Now that the ravages of small-pox are so greatly restrained by vaccination, blindness is by no means so common as once it was. Even yet, however, a large proportion of the cases of blindness met with, perhaps a full half, may fairly be attributed to that loathsome disease, the lower classes being so careless about vaccination, that small-pox still finds among their unprotected children many victims. None of the facts I have been able to collect give any idea of the proportion of persons who were blind from birth, or who became so from the effects of disease. The facts simply refer to the actual number of persons afflicted with blindness in 181 parishes of Scotland, from which we may calculate the proportions existing over the country.

TABLE VIII.

*Showing the Number of Blind, and the Population in 181 Parishes in Scotland.*

Counties.	Parishes.	Population.	Blind.
Edinburgh .....	7	15,279	10
Linlithgow .....	....	....	....
Haddington .....	5	10,711	7
Berwick .....	7	11,654	7
Roxburgh .....	3	4,280	2
Peebles .....	....	....	....
Selkirk .....	1	1,221	2
Dumfries .....	8	24,175	22
Kirkcudbright .....	2	5,572	3
Wigton .....	4	10,426	13
Ayr .....	14	35,117	24
Bute .....	2	4,611	4
Lanark .....	6	18,297	16
Renfrew .....	4	18,653	15
Argyll .....	8	15,777	27
Dumbarton .....	2	4,261	6
Stirling .....	2	12,342	7
Clackmannan .....	1	5,159	3
Kinross .....	3	7,043	8
Fife .....	14	52,974	33
Perth .....	20	64,755	48
Forfar .....	6	18,778	21
Kincardine .....	7	11,856	20
Aberdeen .....	10	22,563	25
Banff .....	8	19,439	16
Elgin .....	6	10,112	15
Nairn .....	....	....	....
Inverness .....	9	23,185	22
Ross and Cromarty .....	8	18,573	21
Sutherland .....	4	7,356	10
Caithness .....	4	17,911	17
Orkney .....	5	7,451	11
Shetland .....	1	1,678	3
	181	481,209	438

Table VIII. shows, that in 181 parishes, embracing a population of 481,209 souls, 438 persons were afflicted with blindness, being in



the proportion of 1 blind in every 1,098 of the general population. Did the same proportion exist over the remainder of the country, then, in 1841, Scotland would have contained 2,385 blind persons.

The following, then, is the calculated number of all the above objects of pity in Scotland in the year 1841, when its population amounted to 2,620,184:—

Insane .....	2,299
Fatuous.....	4,486
Deaf and dumb.....	2,344
Blind.....	2,385
<hr/>	
Total .....	11,514

Thus showing it to be probable that 1 of these objects of pity exists in every 228 inhabitants of Scotland.

#### IV.—*Paupers, Orphan and Deserted Children.*

It will serve to complete the review of the relative proportions of the population who are dependent on others (not being their parents) for support, to state the number of paupers and of deserted and orphan children. Table IX., extracted from the Appendix to the Fourth Report of the Board of Supervision for the Relief of the Poor in Scotland, exhibits very fully and distinctly all the facts on this head, giving the sexes of the constant paupers and of the orphan and deserted children, and showing their distribution over the various counties of Scotland.

By this table, it appears, that, during the year ending May 1849, there were 106,434 paupers on the parish rolls receiving parochial relief, being in the proportion of 1 regular pauper out of every  $24\frac{6}{10}$  persons, according to the census of 1841. As we must, however, allow for increase of population, the numbers of the population would have amounted to 2,816,696 by November 1848, which is the middle of the year under discussion, giving a proportion of 1 regular pauper over Scotland in 1848 for every  $26\frac{5}{10}$  inhabitants. It is not a little surprising to see the immense disproportion of the sexes on the poor's roll, 29,596 only being males, while no fewer than 76,838 were females, giving a proportion of very nearly 3 females to 1 male. As a general rule, this disproportion of the sexes is greatest in the highlands and islands, and least in the agricultural and manufacturing counties.

Strange as it may appear, the number of paupers in the several counties of Scotland bears no proportion to the poverty of the county, as might have been expected. On the other hand, the poorest and most barren counties contain the least proportion of paupers, while the richest in agriculture and in commerce contain by far the largest proportion. Thus the rich county of Edinburgh contains 1 pauper on the parish roll for every 15 inhabitants; Lanark, 1 pauper on the roll for every 16 inhabitants; while Caithness has only 1 pauper for every 21 inhabitants; Aberdeen, 1 in every 27 inhabitants; Argyll, 1 in every 29; the Orkney Islands, only 1 in every 36 inhabitants; while the Shetland Islands furnish only 1 pauper for every 38 inhabitants. In fact, pauperism in Scotland appears to abound most in those counties which have the largest commercial or other towns; next in the highly-

improved agricultural counties; and is least prevalent in those counties where the great mass of the population is just above the starvation point.

TABLE IX.

*Showing the Number of Paupers, Casual Poor, Orphans and Deserted Children in the different Counties of Scotland in the Year ending May 1849.*

Counties.	Number of Paupers.			Number of Casual Poor.	Orphans and Deserted Children.		
	Males.	Females.	Total.		Males.	Females.	Total.
Aberdeen .....	1,460	5,606	7,066	1,535	236	207	443
Argyll .....	921	2,400	3,321	719	74	70	144
Ayr .....	1,347	3,102	4,449	6,569	264	274	538
Banff .....	435	1,426	1,861	256	24	28	52
Berwick .....	412	903	1,315	421	19	21	40
Bute .....	87	356	443	43	15	10	25
Caithness .....	435	1,341	1,776	336	14	11	25
Clackmannan.....	195	478	673	432	29	33	62
Dumbarton .....	294	768	1,062	824	68	72	140
Dumfries .....	682	1,754	2,436	1,112	72	83	155
Edinburgh.....	4,219	10,030	14,249	5,479	715	646	1,361
Elgin .....	315	1,221	1,536	256	19	27	46
Fife .....	1,179	2,935	4,114	4,603	141	154	295
Forfar .....	1,377	3,567	4,944	1,730	258	226	484
Haddington .....	466	961	1,427	1,072	49	53	102
Inverness .....	795	2,869	3,664	715	55	78	133
Kincardine.....	326	993	1,319	270	35	32	67
Kinross .....	45	104	149	155	7	5	12
Kirkcudbright.....	463	1,182	1,645	1,019	43	47	90
Lanark .....	8,290	17,955	26,245	50,015	875	930	1,805
Linlithgow.....	251	648	899	1,052	28	25	53
Nairn.....	54	245	299	14	1	3	4
Orkney .....	173	660	833	73	3	6	9
Shetland .....	120	673	793	201	7	13	20
Peebles .....	114	195	309	73	10	8	18
Perth .....	927	2,898	3,825	1,658	92	112	204
Renfrew.....	1,455	3,834	5,289	8,470	318	268	586
Ross and Cromarty	876	2,974	3,850	383	38	39	77
Roxburgh .....	569	1,154	1,723	2,432	26	43	69
Selkirk .....	60	154	214	1,074	6	6	12
Stirling .....	490	1,424	1,914	1,490	95	102	197
Sutherland.....	206	834	1,040	52	11	11	22
Wigton .....	558	1,194	1,752	1,153	84	85	169
	29,596	76,838	106,434	95,686	3,731	3,728	7,459

To the above number of regular poor must be added the number of casual poor, amounting, during the year ending May 1849, to 95,686 persons, or 1 casual poor person to every  $29\frac{4}{10}$  inhabitants.

The number of orphans and deserted children receiving parochial relief in 1849 was 7,459, being in the proportion of 1 to every 376 inhabitants. It is remarkable that the proportion of sexes among these children is equal, just as it would be in the general population at the same ages. The proportion of deserted children in the different counties seems to follow the same laws as that of the regular poor.



They are most numerous in proportion to the population in the counties containing the large towns, next most numerous in the agricultural counties, and least numerous in the highland and island counties of Scotland.

In these days, when the wealth of a country and its reproductive industry receive the marked attention of all classes, it may be worth a moment's consideration to reckon the proportion of productive and of unproductive labourers in the community.

Mr. Porter, in his remarks on the census of 1841, justly considers that the prosperity of a country is best shown by the larger proportion of productive labourers in its population, and the smaller proportion of unproductive population or children. His remarks were limited to the consideration of the varying proportion of children alone in different European and other states. But startling as were the facts adduced by him, they become much more so when we add the numbers of the different classes above alluded to. Thus, if we reckon all the children under fifteen years as unproductive labourers, the following would represent, in round numbers, the actual amount of individuals in Scotland who require to be supported by the productive labour of both sexes above fifteen years of age:—

Children under 15 years.....	953,186
Regular paupers .....	106,434
Casual paupers .....	95,686
Orphans and deserted children .....	7,459
Insane.....	2,299
Fatuous, or idiots .....	4,486
Deaf and dumb .....	2,344
Blind .....	2,385
<hr/>	
Total .....	1,174,279

If this large number of unproductive persons, amounting to 1,174,279 persons, be deducted from the total population of Scotland, which amounted, in 1841, to 2,620,184, there would be left only 1,445,905 persons as productive labourers. Even this number, however, does not fairly represent the numbers labouring for the support of others. From it would require to be deducted a large proportion of those from fifteen to seventeen years of age, and all above seventy, so that a strict inquiry would find that the half of the population of Scotland was dependent on the other half for support.

#### V.—Births.

The state of the registers of births in Scotland is a disgrace to any country. Not only are few of the births registered, but small care is taken to insure accuracy in the entries which are made; so much so, indeed, that when a certificate of birth is required for any special purpose, it does not cost much trouble to get a whole grown-up family's names entered on the registers, on paying little more than the accustomed fees.

The whole registers are so defective, that even in towns like Edinburgh, Glasgow, and Dundee, where registration is conducted with some care, not exceeding a third of the total births is entered on the registers. In many of the country parishes, however, the clergyman

very properly insists on the parent registering the birth of his child before he baptizes it. But of course this only applies to those who are members of the Established Church.

The only use which I found could be made of the registers of births was to ascertain the proportion of illegitimate children; and as the result is curious in itself, and is the only fact of the kind extant relative to Scotland, it seems worthy of being put on record.

In 79 parishes, there were, among the members of the Established Church, 4,305 births, and of these 328 were illegitimate, being in the proportion of 1 illegitimate birth in every 13.12 births.

By the wise laws of Scotland relative to legitimacy, well worthy of being adopted in England, a large proportion of these children were legitimized by the subsequent marriage of their parents; so that the above numbers give no idea of the proportion of illegitimate persons in the population. Many of the accounts from the clergy of the different parishes set this matter in its true light. Thus, the clergyman of Methlich, Aberdeenshire, remarks, "The number of illegitimate births in the parish within the last three years previous to 1840 was 11, *of which 7 were ante-nuptial cases.*"—Statistical Account, vol. xii., p. 968.

The clergyman of Ancrum, Roxburghshire, says, "During the last three years, there have been 20 illegitimate births, *but in 8 of the cases the parties were afterwards married*" (vol. iii., p. 247).

Of Tain, in Ross-shire, it is remarked, "Number of illegitimate children in the parish during the last three years 15, *but this includes several cases that were afterwards followed by the marriage of the parents*" (vol. xiv., p. 293).

Of Clonmel, in Ayrshire, it is remarked, "*Instances of this kind (illegitimate births) have of late years been generally followed by marriage*" (vol. v., p. 530).

Of the parishes of Liff and Beuvri, Forfarshire, the clergyman remarks, "The number of illegitimate children born within the parish within the last three years is 7. *In most of these cases the parents were afterwards married!*" &c.

I have been the more particular in bringing prominently forward these facts relative to the diminution of the number of illegitimate children in the population by the subsequent marriage of the parents, from the circumstance that, in every enlightened community, the number and condition of the illegitimate are attracting more or less attention. Illegitimacy, as Bernouilli very justly remarks, is in itself an evil to a man; and I quite agree with him, that it is the duty of the State not only to seek to diminish the number of illegitimate births, but, by every means in its power, to lessen the proportion of illegitimacy in its population. I cannot but regard the Scottish laws relative to legitimacy as both wise and just, that *the subsequent marriage of the parents legitimizes all the children born before marriage.* I hold it to be one of the crying evils of the English law, that no amount of repentance of the parents, and no subsequent marriage, can legitimize the offspring born before marriage. Why should the laws of man on this point be more unforgiving than the laws of God? The having illegitimate children is *not a crime* punishable by the laws of man; and if the parents are willing and anxious to place their children in a more favourable social position, why should the laws of man interfere



and declare that no subsequent marriage can legitimize these children, or place them in a more favourable social position than that they received, without any fault of theirs, at birth? Scotland is a standing proof that the allowing children to be legitimized by the subsequent marriage of their parents is not found to have any hurtful effects on the morals of the people; and as this is both an enlightened and a moral mode of reducing the proportion of the illegitimate among the general population, I hope the day is not far distant when we shall see our legislators assimilate the English laws on this point to those of Scotland.

As it is interesting to compare the relative proportions of illegitimate births in the different countries of Europe, the following table (X.) is appended, compiled from the Registrar-General's Sixth Annual Report. The table shows both the total average annual number of births and of illegitimate births, and the proportion of the illegitimate to the total births.

TABLE X.

*Showing the Proportion of Illegitimate to the Total Births in several Countries of Europe.*

States.	Total Births.	Illegitimate Births.	Ratio of Illegitimate Births to 100 Births.	Proportion, One Illegitimate to
Sardinia .....	1,457,493	30,474	2.09	1 in 44.54
Sweden .....	476,799	31,289	6.56	„ 15.23
Norway .....	181,363	12,111	6.67	„ 14.97
England .....	517,739	34,796	6.72	„ 14.88
Belgium .....	138,135	9,354	6.77	„ 14.66
France .....	982,896	69,928	7.11	„ 14.05
Prussia.....	591,505	42,129	7.12	„ 14.03
Scotland (part of) ....	4,305	328	7.61	„ 13.12
Denmark .....	64,376	6,020	9.35	„ 10.69
Hanover .....	55,559	5,487	9.87	„ 10.12
Austria .....	894,711	101,821	11.38	„ 8.79
Wurtemberg .....	75,456	8,859	11.74	„ 8.51
Saxony.....	70,094	10,512	14.99	„ 6.66
Bavaria .....	149,185	30,729	20.59	„ 4.85

## VI.—Marriages.

Table XI. exhibits the number of marriages in 523 parishes of Scotland, embracing a population of 1,509,760 souls, and including all the chief towns. This table is compiled partly from the facts stated relative to marriages in that voluminous work, the "Statistical Account of Scotland," partly from official returns obtained through the kindness of the Chamberlains of many of the large towns. The registers of marriage in Scotland are both registers of the proclamations of the banns of marriage and also of the marriage itself. In many of the large towns, a proportion of the parties marrying are so careless in the matter of registration, that they do not return to enter the marriage itself on the register. But in almost all the country parts of Scotland, this point is more attended to, and the registers of marriage are therefore more perfect.

By the Scottish marriage law, no clergyman dares unite parties in marriage unless he is certified by the production of the banns of marriage that the intention has been three times proclaimed in the parish church of each of the parties. If the parties belong to different parishes, each marriage may be twice registered. The clergy, however, in drawing up their respective reports, have very wisely allowed for this; and while they return all the marriages where both parties reside in the parish, only return the half in cases in which only one of the parties resided in the parish. It thus happens that the aggregate returns from the parishes furnish an exact list of the number of marriages among the population.

TABLE XI.

*Showing the Number of Marriages and their Proportion to the Population in 523 Parishes of Scotland.*

Counties.	Number of Parishes.	Population.	Marriages.	Proportion.
Edinburgh .....	31	200,230	1,528	1 in 132
Linlithgow .....	4	6,844	42	„ 162
Haddington .....	16	23,148	176	„ 131
Berwick .....	18	21,186	152	„ 136
Roxburgh .....	12	21,955	157	„ 133
Peebles .....	14	7,680	61	„ 125
Selkirk .....	3	4,584	36	„ 127
Dumfries .....	31	40,350	364	„ 110
Kirkcudbright .....	10	16,304	94	„ 173
Wigton .....	8	19,927	118	„ 168
Ayr .....	27	85,496	797	„ 107
Bute .....	4	11,532	56	„ 206
Lanark .....	40	360,803	2,893	„ 124
Renfrew .....	18	81,959	816	„ 100
Argyll .....	22	38,943	243	„ 160
Dumbarton .....	8	24,327	201	„ 121
Stirling .....	13	44,138	367	„ 120
Clackmannan .....	1	1,500	14	„ 107
Fife .....	38	57,408	617	„ 93
Kinross .....	1	3,008	22	„ 136
Perth .....	41	91,790	739	„ 124
Forfar .....	29	113,722	973	„ 115
Kincardine .....	12	18,918	148	„ 128
Aberdeen .....	37	117,843	879	„ 134
Banff .....	14	27,911	184	„ 151
Elgin .....	10	18,610	130	„ 143
Nairn .....	2	2,634	16	„ 164
Inverness .....	13	23,911	151	„ 158
Ross and Cromarty .....	19	39,391	272	„ 144
Sutherland .....	7	13,415	77	„ 174
Caithness .....	7	23,334	137	„ 170
Orkney .....	9	12,936	84	„ 154
Shetland .....	4	4,030	25	„ 161
	523	1,509,761	11,579	1 in 130·3

Table XI. gives the mean annual number of marriages in 523 parishes of Scotland, the period of observation extending over a period of seven years, comprised between the years 1835 and 1845. From



this table it appears, that in a population of 1,509,761, there occurred annually 11,579 marriages, or 1 marriage annually out of every  $130\frac{3}{10}$  souls. This proportion is very little inferior to the proportion of marriages in England during the same period. From the Registrar-General's Eighth Annual Report we learn that the proportion of marriages in England, from 1836 to 1845, was, annually, 1 marriage out of every  $128\frac{3}{10}$  souls. The fact of the returns from Scotland corresponding so closely with those of the sister country, of itself shows how carefully these returns have been prepared, and give greater confidence to any conclusions founded thereon.

A reference to the last column of Table XI. shows that the proportion of marriages in the different counties varied considerably. As a general rule, marriages were most numerous where manufactures, trade, and agriculture, were most actively carried on, and fewest in the highland and island districts.

As the above returns embrace more than a half of the entire population of Scotland, they may be considered to give a very fair and correct view of the proportion of marriages in the population. Calculating the proportion of marriages to the entire population at the same rate, would lead to the conclusion that, in 1841, when the number of the population stood at 2,620,184, the annual number of marriages would amount to 20,095, being 1 marriage in every  $130\frac{3}{10}$  souls.

For the sake of comparison, I have appended a table of the proportion of marriages in several of the countries of Europe, compiled from the Registrar-General's Report.

TABLE XII.

*Showing the Proportion of Marriages to the Population in the Different Countries of Europe.*

	Years.	Proportion of Marriages to Population.
Frankfort.....	1837-42	1 marriage in 193
Bavaria .....	1839	„ 152
Denmark .....	1835-39	„ 134
Hanover .....	1842	„ 132
Sweden .....	1826-35	„ 131
Scotland .....	1835-45	„ 130
Norway .....	1826-38	„ 129
England .....	1835-45	„ 128
France .....	1842	„ 122
Austria .....	1834, 7, 9	„ 120
Prussia.....	1840, 41	„ 109
Russia .....	1842	„ 99
Belgium .....	1841	„ 93
Saxony.....	1832-38	„ 80

Before leaving the subject of marriages, it may be mentioned that there is one point on which it is exceedingly desirable we had more particular information, viz., the relative proportion of fruitful and unfruitful marriages. On this important point in vital statistics and social economy we possess very little information; indeed, almost all we do know we owe to the investigations of Professor Simpson, of

Edinburgh, published in the "Edinburgh Medical and Surgical Journal, for January 1844." He got some friends to take the census of two villages for him, for the purpose of ascertaining this very point, viz., the census of Grangemouth, in Stirlingshire, and of Bathgate, in Edinburghshire. At the same time he added the results obtained from a critical examination of Sharpe's work on the British Peerage. The following was the table he gave as the result of his researches:—

	Total Number of Marriages.	Number of Marriages without Issue.	Proportion.
Grangemouth .....	202	20	1 in $10\frac{1}{2}$
Bathgate .....	455	45	„ $10\frac{1}{9}$
British Peerage ....	495	81	„ $6\frac{1}{9}$
	1,252	146	1 in $8\frac{4}{7}$

It may be mentioned, however, that in Sharpe's work on the British Peerage, in 1833, it is mentioned that there were in all 503 marriages, of which 401 had issue, and 102 had no issue; but Professor Simpson, in his calculations, did not include marriages which had not subsisted at least five complete years; he also excluded the unproductive marriages where the husband at the date of the marriage exceeded fifty-six years of age. He therefore made the real proportion of marriages *with* issue appear greater than it really was.

In the "Statistical Account of Scotland," I have met with accurate returns on this point from only two parishes. Many state the number of families with or without children, but forget to tell us how many of these families consisted of single unmarried persons.

In the account of the parish of Portpatrick, in Wigton, it is mentioned that the number of persons in the parish who have been married was 680, and of these 31 had no issue, giving a proportion of one married person without issue for every 21·9 married.

In the parish of Birse, Aberdeenshire, the number of marriages subsisting in the parish, including widows and widowers, was 259, of which 14 had no issue, giving a proportion of 1 marriage without issue for every 18·0 marriages.

These facts are too few to allow of any general conclusions being deduced from them. They, however, induce the earnest desire that the approaching census of the population may be taken with sufficient minuteness to throw some light on such an interesting subject.

#### VII.—Deaths.

Table XIII. is compiled from the returns of deaths made in the "Statistical Account of Scotland," and is limited entirely to the country districts, including the smaller towns and villages. The mortality of the fourteen larger towns is excluded, and is given in a separate table. This table gives the average population and the mean annual deaths for each parish referred to during a period of seven years,



most of these seven years being included between the years 1835 and 1845.

TABLE XIII.

*Showing a Seven Years' Average of the Annual Number of Deaths and their Proportion to the Population in 331 Parishes of Scotland.*

Counties.	Number of Parishes.	Population.	Deaths.	Proportion.
Edinburgh .....	8	26,638	623	1 in 42·7
Haddington .....	12	19,247	311	„ 61·8
Berwick .....	16	19,442	268	„ 72·5
Linlithgow .....	5	9,653	145	„ 66·5
Roxburgh.....	11	15,119	227	„ 66·6
Peebles.....	9	7,135	91	„ 78·4
Selkirk.....	3	4,584	81	„ 56·6
Dumfries .....	26	46,935	704	„ 66·6
Kirkcudbright .....	7	12,091	189	„ 63·4
Wigton .....	4	8,279	116	„ 71·2
Ayr .....	22	73,509	1,420	„ 52·4
Bute.....	3	7,955	155	„ 51·3
Lanark.....	25	78,335	1,396	„ 56·1
Renfrew .....	7	75,005	2,217	„ 33·8
Argyll .....	3	8,201	176	„ 46·6
Dumbarton .....	5	12,539	312	„ 40·1
Stirling .....	9	25,301	436	„ 58·0
Clackmannan .....	1	1,500	14	„ 107·1
Kinross .....	1	3,008	53	„ 56·7
Fife .....	31	59,952	1,293	„ 46·3
Perth .....	27	64,277	1,258	„ 51·0
Forfar .....	31	101,579	1,904	„ 53·3
Kincardine .....	10	14,166	303	„ 46·7
Aberdeen.....	23	38,530	621	„ 62·0
Banff .....	4	13,056	195	„ 72·0
Elgin .....	5	12,079	146	„ 82·7
Nairn .....	1	1,457	34	„ 42·8
Inverness.....	1	1,092	15	„ 72·8
Ross and Cromarty....	6	14,150	172	„ 82·2
Sutherland .....	4	7,379	105	„ 70·2
Caithness.....	3	6,436	83	„ 77·5
Orkney .....	6	11,210	166	„ 67·5
Shetland .....	2	2,177	21	„ 103·6
	331	751,016	15,250	1 in 49·2

From this table it appears, that in 331 parishes, embracing a population of 751,016 souls, there died annually during each of these seven years 15,250 persons. This gives a proportion of 1 death annually out of every  $49\frac{2}{10}$  living, or 20·30 deaths annually out of every 1,000 living. It is unnecessary to remark, that this fact exhibits the healthiness of Scotland in a favourable light. The mean annual mortality for all England for the eight years 1838 to 1845 was in the proportion of 1 death annually out of every 46 persons living, or 21·76 deaths per annum out of every 1,000 living.

It will be seen by a reference to Table XIV., that the mortality in the towns of Scotland is considerably higher than it is in the country districts. Thus, in fourteen of the chief towns of Scotland, em-

bracing a population of 764,297 persons, the annual average of deaths amounted to 20,397, being in the proportion of 1 death annually out of every  $37\frac{4}{10}$  living, or 26·68 deaths per annum out of every 1,000 inhabitants.

TABLE XIV.

*Showing the Average Annual Mortality in the 14 Chief Towns of Scotland.*

Towns.	Years of Observation*.	Population.	Deaths.	Proportion.
Edinburgh .....	1841-46	140,409	3,873	1 in 36·2
Glasgow .....	1838-44	282,087	8,049	„ 35·0
Aberdeen .....	1845-47	63,288	1,333	„ 47·4
Dundee .....	1839-46	62,794	1,528	„ 41·0
Greenock .....	1845, 6, 8	36,936	1,055	„ 35·0
Paisley .....	1845, 6, 8	50,000	1,378	„ 36·2
Leith .....	1845-7	26,808	747	„ 35·8
Kilmarnock .....	1845-8	19,956	565	„ 35·3
Perth .....	1845-7	19,293	510	„ 37·8
Dumfries .....	1826-32	11,606	229	„ 50·6
Ayr .....	1830-36	7,525	175	„ 43·0
Falkirk .....	1833-39	13,037	255	„ 51·1
Dumfermline .....	1837-43	18,500	407	„ 45·4
Montrose .....	1828-34	12,055	293	„ 41·2
		764,297	20,397	1 in 37·4

\* It may be mentioned, once for all, that in every case, and in every table, all the years named are included. Thus, 1841-46 means from the beginning of the year 1841 to the end of the year 1846.

Table XIV. is drawn up from various sources, viz., from the official reports furnished by the Chamberlains of several of these towns, from the Reports of the British Association, in 1842, from the Reports on the Sanitary State of Edinburgh, and Reports on the Mortality of Edinburgh and Leith, by myself, and from the “Statistical Account of Scotland.” The reports of several of these towns could have been brought down to the present day, but as the last two years in especial have been years of unusual epidemic mortality, it was thought that a more correct estimate of the average or mean mortality would be arrived at by selecting the years named in the table. With regard to Greenock, Perth, and Kilmarnock, it may be mentioned, that I have not been able to procure correct returns for any years but those above noted; and with regard to Paisley, the mortality during the year 1847 has been omitted, seeing that, during that year, the mortality was raised much above its average by the influx of poor Irish labouring under typhus fever.

If we endeavour to estimate the number of deaths over the whole of Scotland, the above facts enable us to do so. Excepting the population of the above fourteen towns, the whole of the rest of the population of Scotland may be considered as resident in the country, and it is fair to infer that its mortality will be the same as that of the 331 parishes mentioned in Table XIII. The following will therefore be



the results furnished by calculations founded on the above observations:—

	Population.	Deaths.
14 towns .....	764,297	20,397
331 parishes .....	751,016	15,250
Rest of Scotland .....	1,104,871	23,564
Total of Scotland....	2,620,184	59,211

This, then, is the nearest approximation which is at present possible to the usual rate of mortality in Scotland; the population of the towns dying at the rate of 1 annually out of every 37 persons living, and of the country at the rate of 1 annually out of every 49 living.

To complete this short view of the Vital Statistics of Scotland, tables are added of the ages at death, of the principal fatal diseases, and of the mortality during each month of the year. It is much to be regretted that this can only be done for the towns, seeing that the returns from the country parishes give little else than the number of the deaths.

As, however, these tables are drawn up with the view of exhibiting the usual or mean mortality, and not the high and unusual mortality of epidemic years, and as in this paper it is desirable to give all the information which I possess, I have added, in Table XV., the mortality in nine of the chief towns of Scotland to the latest period of which I have been able to obtain the statistics.

TABLE XV.

*Showing the Mortality in Different Towns of Scotland for a Series of Years to the Latest Period for which Returns have been procured.*

	1849.	1848.	1847.	1846.	1845.	1844.	1843.	1842.	1841.	1840.	1839.
Edinburgh .....	4,807	5,475	6,706	4,594	3,668	3,964	4,541	3,854	3,507	3,688	4,046
Glasgow .....	12,231	12,475	18,081	10,854	7,509	7,367	9,459	7,359	8,886	8,821	7,525
Dundee .....	2,312	2,146	2,520	1,531	1,324	1,169	1,509	1,471	1,358	1,320	1,647
Paisley .....	1,712	1,552	2,068	1,429	1,154	...	...	...	...	...	...
Leith .....	1,066	1,212	955	801	486	...	...	...	613	690	...
Greenock .....	2,344	1,289	2,214	1,087	788	709	911	...	...	...	...
Perth .....	...	921	683	505	389	...	...	...	466	445	428
Kilmarnock .....	...	539	862	459	399	...	...	...	...	...	...
Aberdeen .....	...	2,366	1,466	1,315	1,217	...	...	...	1,034	1,384	1,149

This table (XV.) exhibits some facts for which we were not prepared. On the Continent, it has generally been remarked that the cholera more than doubled the annual mortality, and in every case caused the mortality of the year during which it prevailed to rise high above all previous years. Such has not been noticed to the same extent in Scotland, severe as cholera was, and destructive as were its ravages. In Edinburgh, in Glasgow, in Dundee, and in Paisley, the mortality during 1847, the year of epidemic typhus fever, greatly exceeded that of the year or years when cholera raged. Thus, cholera

raged in Edinburgh in 1848 and 1849, but the typhus fever epidemic caused the mortality of 1847 to exceed that of 1848 by 1,231 deaths, and that of 1849 by no fewer than 1,899 deaths. In Glasgow, again, the typhus fever epidemic caused the mortality of 1837 to exceed that of the cholera year 1848 by no fewer than 5,606 deaths, and also to exceed the mortality of the cholera year 1849 by no fewer than 5,850 deaths.

Dundee and Paisley, though both very smartly handled by the cholera, exhibited the same remarkable fact, the typhus fever year of 1847 showing a higher mortality than the cholera year 1849.

Seeing this is the case, seeing also that cholera is a disease which, as yet, has only passed over us at long and distant intervals—whereas typhus fever, at all times endemic, breaks out in the epidemic form every five or six years—it is the duty of the Legislature to enforce the use of all those means and appliances which the science of the present day has shown to be so efficacious in diminishing the virulence and fatality of that endemic and epidemic malady. With regard to Edinburgh, I can speak positively, that ever since the Irish settled here, epidemics of typhus fever have become more and more frequent, and more and more virulent. It must be borne in mind that typhus fever, being an *endemic* as well as an *epidemic* disease, is always to be met with in particular localities; but formerly it was wont to extend over the town *as an epidemic* only every tenth or twelfth year. Such, however, has been the increased tendency to this complaint of late years, that, during the ten years ending 1848, we have had no fewer than three virulent epidemics of this disease, and every succeeding epidemic has been more prevalent and more virulent than the former one. In proof of this, it may be mentioned, that, during the prevalence of typhus fever during these three several epidemics, the monthly admissions to the fever-wards of the Royal Infirmary, the only hospital we have, were as follows:

Epidemic 1836-39 .....	monthly admissions,	134 cases.
„ 1843-44 .....	„	380 „
„ 1847-48 .....	„	420 „

These facts, then, demonstrate the necessity of actively carrying out those sanitary measures which the sudden invasion and dread of cholera caused to be put in force for a while. We have far more to dread from typhus fever than from cholera; the one is but an occasional visitant, the other is a constant resident. Both cut off by preference those in the prime of life—both, consequently, throw thousands of widows and helpless orphans on the charity of the public. But the above facts clearly demonstrate that typhus is the greater scourge of the two, and proves a greater burden to the country, by the greater number of deaths of those in the prime of life which it occasions. The statist has done all in his power, when he points out these facts to the Legislature; it is for Government to follow these up by an enforcement of the means which science has clearly shown will save human life and increase human happiness.



TABLE XVI.

*Showing the Ages at Death in Eight of the Chief Towns of Scotland during a Series of Years.*

Ages.	Edinburgh, 1846-7-8.		Leith, 1846-7-8.		Glasgow, 1838-44.		Dundee, 1839-46.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
Under 1 year	1,463	1,176	206	207	5,986	5,076	1,264	1,042
1 to 2 yrs.	723	741	152	142	3,790	3,621	612	590
2 „ 5 „	706	658	137	141	3,661	3,487	646	656
5 „ 10 „	385	390	65	77	1,776	1,603	304	301
10 „ 15 „	159	163	23	26	747	705	}282	246
15 „ 20 „	369	280	58	49	896	867		
20 „ 30 „	931	813	113	110	2,144	2,279	327	398
30 „ 40 „	859	792	155	143	2,141	2,223	403	432
40 „ 50 „	874	742	127	137	2,160	2,060	465	476
50 „ 60 „	695	725	127	125	1,687	1,576	367	404
60 „ 70 „	621	747	124	139	1,651	1,813	382	477
70 „ 80 „	466	634	86	135	1,283	1,661	369	490
80 „ 90 „	170	252	25	47	542	829	159	200
90 „ 100 „	13	44	1	3	60	112	16	26
100 and above	....	5	....	....	5	8	1	4
Not stated ....	91	88	13	25	....	....	....	....
	8,525	8,250	1,412	1,506	28,529	27,920	5,597	5,742
Still-born.....	556	336	121	88	3,003	2,359	507	390

Ages.	Paisley, 1847-8-9.		Greenock, 1843 and 1848.		Aberdeen, 1837-40.		Perth, 1837-41.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
Under 1 year	377	309	176	149	347	297	151	188
1 to 2 yrs.	277	221	84	94	205	175	106	88
2 „ 5 „	325	317	105	94	293	258	126	112
5 „ 10 „	212	164	58	51	186	169	52	42
10 „ 15 „	83	79	28	18	93	68	28	25
15 „ 20 „	103	98	43	39	113	110	37	27
20 „ 30 „	219	201	99	107	204	226	90	84
30 „ 40 „	180	201	99	103	219	231	78	89
40 „ 50 „	200	245	116	97	221	220	103	93
50 „ 60 „	193	210	83	88	222	208	105	111
60 „ 70 „	206	213	86	89	246	255	133	148
70 „ 80 „	174	217	62	70	185	257	154	186
80 „ 90 „	68	90	24	44	112	166	78	115
90 „ 100 „	3	13	1	4	16	33	4	13
100 and above	....	....	....	....	1	1	....	....
Not stated ....	60	55	25	28	....	....	....	....
	2,680	2,633	1,089	1,075	2,663	2,674	1,245	1,321
Still-born.....	155	101	130		?	?	248	

Table XVI. shows the ages at death in eight of the chief towns of Scotland, each for a longer or shorter period of time. To render the facts relative to each town available for comparison with each other, it

was necessary to give a short abstract of this table, and add the calculated proportion which the deaths at four periods of life bear to the total deaths. This has been done on Table XVII., by which it will be seen that the proportion of deaths among children under five years of age is lowest in Aberdeen, and highest in Glasgow. If these eight towns were arranged according to their relative low infantile mortality, they would stand thus:—

Least—Aberdeen,	295	deaths under 5 in 1000 deaths at all ages.
„ Perth,	300	„ „
„ Edinburgh,	329	„ „
„ Greenock,	332	„ „
„ Leith,	342	„ „
„ Paisley,	351	„ „
„ Dundee,	424	„ „
Greatest—Glasgow,	453	„ „

With the exception of Aberdeen and Perth, which exchange places, these towns arrange themselves in the same order, if placed according to the relative mortality among children under fifteen years of age. Thus:—

Perth	} 357 deaths under 15 yrs. per 1000.	Leith	} 408 deaths under 15 yrs. per 1000.
Aberdeen		Paisley	
Edinburgh	391 „ „	Glasgow	454 „ „
Greenock	395 „ „		539 „ „
	405 „ „		

Dundee, from not giving the ages between ten and fifteen, but only between ten and twenty, is rendered unavailable for comparison but for those under ten and above sixty years of age.

The position which these towns occupy when arranged according to the proportion of least mortality in adult age, is very different from the above; indeed, with the exception of Perth and Aberdeen, relative to whose entire statistics there is manifestly some inaccuracy, they occupy the very reverse positions of what they did when arranged according to the proportion of least mortality among children. Thus:—

Perth,	318	deaths between 15 and 60 years in 1000 deaths at all ages.
Glasgow,	319	„ „
Paisley,	355	„ „
Aberdeen,	391	„ „
Leith,	397	„ „
Greenock,	417	„ „
Edinburgh,	426	„ „

It may be remarked that, with the above exceptions, this is the exact position these towns ought to occupy, if the above facts were accurately collected. If, from a greater amount of attention during infancy, or from a more healthy locality, a greater number of children survive the numerous perils of infancy, there must be among the adults of such population or places a much greater proportion of physically-feeble individuals than in a population or locality where all the feeble are cut off during early life, and only those saved whose constitutions are hardened, and whose frames are thereby better enabled to bear the ills of life.

We see this fact illustrated not only in the mortality of different towns whose healthiness is notoriously different, but still more strikingly in the comparative mortality among the different classes of



society in the same town. Among the higher ranks, most of the children are reared. Among the lower classes, more than a half are cut off before they attain their fifteenth year; and in numerous unhealthy towns, a half of all who are born to the lower classes are cut off before they reach their fifth year. The natural physiological consequence of this is, that, among the adults of the higher classes, there exists a much larger proportion of individuals of feeble frames than among the lower classes. They are, consequently, not only more liable to disease, *but, of necessity, die in larger proportions than the adults of the lower classes.*

The known fact that the upper classes of society do not keep up their own numbers, but require constant recruiting from the lower classes, probably receives an explanation from this very cause. A large proportion of them must possess those weak and feeble constitutions which are unfavourable to increase; and this cause, probably more than the dissipated lives which many, but far from all, lead, appears to me rationally to explain why so many of our old families have died out.

By a reference to the concluding paragraphs of the section on "Marriages," it will be seen how forcibly this conclusion is borne out by the immense proportion of unfruitful marriages existing among the peerage of Great Britain as compared with what occurs among the general population. Among the British peers in 1833, there were 503 existing marriages, of which no fewer than 102 had no issue, being in the great proportion of 1 out of every 5 marriages without issue. By the returns from two parishes in Scotland, only 1 marriage in every 18, and 1 in every 22 marriages, were unfruitful.

TABLE XVII.

*Showing the Ages at Death at four different periods of Life, and their Proportion to 1000 Deaths at all Ages.*

	Edinburgh.		Leith.		Glasgow.		Dundee.	
	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.
Under 5 Years ....	5,467	329.	985	342.	25,621	453.	4,810	424.
Total under 15 ....	6,564	395.	1,176	408.	30,452	539.	?	?
15 to 60 Years ....	7,080	426.	1,144	397.	18,033	319.	?	?
Above 60 .....	2,952	177.	560	194.	7,964	141.	2,134	188.
Total.....	16,596	....	2,880	....	56,449	....	11,339	....

	Paisley.		Greenock.		Aberdeen.		Perth.	
	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.
Under 5 Years ....	1,826	351.	702	332.	1,575	295.	771	300.
Total under 15 ....	2,364	454.	857	405.	2,091	391.	918	357.
15 to 60 Years ....	1,850	355.	874	417.	1,974	370.	817	318.
Above 60 .....	984	189.	380	180.	1,272	238.	831	324.
Total.....	5,198	....	2,111	....	5,337	....	2,566	....

NOTE.—In this Table, the "Ages not ascertained" are not included in the totals.

Table XVIII. is constructed for the purpose of showing the proportion of deaths to the living at different ages in seven of the chief towns of Scotland. Instead, however, of taking the latest years, I have selected as years of comparison those of 1840-41-42. This has been done for special reasons. The introduction of railroads to most of our chief towns has very sensibly affected the numbers of the population; and the ratio of increase between 1831 and 1841 affords but a feeble approximation, if any, to the present state of these towns. In a paper like this, therefore, whose object is rather to give a view of the mortality usually prevalent, than to report on the mortality of epidemic years, it was necessary to make a selection, and those chosen possess the double advantage of being easily and correctly comparable with the ascertained population, and of being years of mean mortality. I regret I have not been able to add Paisley, in consequence of the Government Abstract of the population not including all the suburbs which are included within the Mortality Bills. This oversight, it is to be hoped, will be remedied in our next census. Of Aberdeen, as formerly remarked, the figures are not to be depended on. With these exceptions, the table may be generally relied on.

TABLE XVIII.  
*Showing the Population and Deaths at different Ages, and the Proportion of Deaths to the Population at these Ages in seven chief Towns of Scotland. Deaths the Average of 1840-1-2.*

	TOTAL.			Under 5 Years.			Total under 15 Years.		
	Popula- tion.	Deaths.	Ratio.	Popula- tion.	Deaths.	Ratio.	Popula- tion.	Deaths.	Ratio.
Edinburgh .....	140,241	3,520	1 in 39·8	15,327	1,183	1 in 12·9	43,907	1,457	1 in 30·1
Glasgow .....	282,343	8,112	1 in 34·6	35,372	3,861	1 in 9·1	93,527	4,581	1 in 20·4
Dundee .....	62,794	1,383	1 in 45·3	8,608	628	1 in 13·6	22,293	742	1 in 30·0
Greenock .....	36,936	1,055	1 in 35·0	4,994	351	1 in 14·2	12,917	428	1 in 30·1
Leith .....	28,159	681	1 in 41·3	3,562	214	1 in 16·6	9,779	257	1 in 38·0
Aberdeen .....	63,288	1,189	1 in 53·2	7,864	345	1 in 22·9	21,745	459	1 in 47·3
Perth .....	19,293	446	1 in 43·2	2,331	133	1 in 17·5	6,451	158	1 in 40·8

	15 to 60 Years.			Above 60 Years.		
	Population.	Deaths.	Ratio.	Population.	Deaths.	Ratio.
Edinburgh .....	87,500	1,343	1 in 65·1	18,834	720	1 in 12·2
Glasgow .....	177,241	2,493	1 in 71·0	11,575	1,048	1 in 11·0
Dundee .....	36,537	396	1 in 92·2	3,413	245	1 in 13·9
Greenock .....	22,096	437	1 in 50·3	1,884	190	1 in 9·9
Leith .....	16,771	248	1 in 67·6	1,582	146	1 in 10·7
Aberdeen .....	36,443	436	1 in 83·5	2,927	295	1 in 9·9
Perth .....	11,055	138	1 in 80·1	1,780	150	1 in 11·8

NOTE.—The total Deaths do not correspond with the numbers produced under the different ages, as the totals include the “Ages not ascertained.”

This table then shows the not unaccountable fact, that, just in proportion to the amount of misery and destitution in a town, is the proportion of mortality to the population. Beyond all comparison, Glasgow exceeds in this respect; and it is instructive to note that, even in these years of mean mortality, the population died at the high rate of 1 annually out of every  $34\frac{6}{10}$  inhabitants. Greenock, then Edinburgh, follow; then Leith, Perth, Dundee, and Aberdeen. If



these towns were arranged according to the proportion of deaths out of the population, at four periods of life, placing highest that town in which the least mortality occurred at the age specified, they would arrange themselves thus:—

Proportion of Deaths under 5 Years to Population under 5 Years.	Proportion of Deaths under 15 Years to Population under 15 Years.
Aberdeen ..... 1 death in 22·9 living.	Aberdeen ..... 1 death in 47·3 living.
Perth..... " 17·5 "	Perth..... " 40·8 "
Leith..... " 16·6 "	Leith..... " 38·0 "
Greenock ..... " 14·2 "	Greenock ..... " 30·1 "
Dundee..... " 13·6 "	Edinburgh ..... " 30·1 "
Edinburgh .... " 12·9 "	Dundee..... " 30·0 "
Glasgow ..... " 9·1 "	Glasgow ..... " 20·4 "
Proportion of Deaths between 15 and 60 Years in Population at same Ages.	Proportion of Deaths above 60 Years in Population at same Ages.
Dundee ..... 1 death in 92·2 living.	Dundee..... 1 death in 13·9 living.
Aberdeen ..... " 83·5 "	Edinburgh ..... " 12·2 "
Perth ..... " 80·1 "	Perth ..... " 11·8 "
Glasgow..... " 71·0 "	Glasgow ..... " 11·0 "
Leith ..... " 67·6 "	Leith ..... " 10·7 "
Edinburgh..... " 65·1 "	Greenock ..... " 9·9 "
Greenock ..... " 50·3 "	Aberdeen ..... " 9·9 "

We thus see, that, of all these towns, Glasgow is out of all proportion the most unfavourable to childhood, no fewer than 1 child out of every 20, under fifteen years of age, dying annually there; while in Edinburgh, Dundee, and Greenock, which approach nearer to it than any of the other towns, only 1 child dies annually out of every 30 living. Dundee and Edinburgh, on the other hand, take their place at the head of the list as the most favoured towns of Scotland to the aged; in them, the aged are only cut off at the rate of 1 out of every 14 in Dundee, and 1 out of every 12 in Edinburgh, annually; whereas, in Greenock and Aberdeen, 1 is cut off annually out of every 10 persons above sixty years of age.

Table XIX. shows the influence of seasons on the mortality in eight of the chief towns of Scotland, and the results furnished are curious, as demonstrating how much the mortality of the seasons is modified by situation, exposure, or shelter, and the like.

Villermé, Quetelet, and most writers on medical statistics, from confining their attention too exclusively to the statistics of the seasons in one town or country, have spoken too confidently of the influence of season on the mortality. Dr. Casper, of Berlin, appears to have been the first who studied this subject in a truly philosophical spirit, and collected and compared the statistics of the mortality as affected by season from various quarters of the globe. His valuable Essays on Medical Statistics clearly prove how difficult it is to draw any decided conclusion on the subject, seeing the influence of the seasons on the mortality in each town or country is modified by so many circumstances of which as yet we know little. The only conclusions, therefore, which he ventures to draw are, *first*, that "Spring is the most dangerous, and summer the most favourable, season to health;" and,

second, that “Extremes of temperature, whether high or low, are eminently destructive to health.”

TABLE XIX.

*Showing the Influence of Season on Mortality in Eight Towns of Scotland.*  
(The Deaths from Epidemic Cholera are excluded.)

Months.	Edinburgh, 1845-8.			Glasgow, 1837-44.			Leith, 1835-8.		
	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
January .....	935	897	1,832	3,850	2,723	7,573	158	159	317
February ....	839	793	1,632	3,032	3,039	6,071	121	142	263
March .....	854	825	1,679	3,061	2,939	6,000	136	131	267
April .....	776	756	1,532	2,663	2,485	5,148	110	119	229
May .....	815	724	1,539	2,551	2,413	4,964	124	123	247
June .....	758	718	1,476	2,459	2,396	4,855	114	102	216
July .....	791	701	1,492	2,559	2,378	4,937	116	117	233
August .....	724	680	1,404	2,835	2,719	5,554	107	119	226
September ....	765	728	1,493	2,677	2,529	5,206	160	129	289
October .....	843	838	1,681	2,540	2,639	5,179	146	144	290
November ....	927	955	1,892	2,724	2,583	5,307	152	160	312
December ....	1,146	1,200	2,346	2,971	2,804	5,774	183	200	383

Months.	Dundee, 1839-45.			Paisley, 1837-8-9.			Greenock, 1843 & 48.	Perth, 1837-41.	Aberdeen, 1837-41.
	Male.	Female.	Total.	Male.	Female.	Total.			
January .....	537	583	1,120	345	314	661	888	341	725
February ....	530	528	1,058	242	234	476	806	251	629
March .....	460	492	952	240	257	497	797	223	601
April .....	441	454	895	242	222	464	731	218	552
May .....	440	432	872	208	214	422	699	222	534
June .....	354	381	735	176	192	368	630	150	487
July .....	434	376	810	196	185	381	617	176	446
August .....	371	345	716	213	180	393	695	197	414
September ....	344	332	676	191	175	366	767	188	438
October .....	427	426	853	185	192	377	718	183	457
November ....	427	432	859	190	199	389	723	200	494
December ....	481	529	1,010	297	265	562	892	210	593

The above table, exhibiting the mortality in eight towns during the several months of the year, and extending over periods of observation varying from three to eight years, clearly demonstrates that other agencies besides mere weather are at work, forwarding, retarding, or rendering irregular, the influence of season on the mortality. Thus, in both Edinburgh and Leith, December is out of all proportion the month during which the greatest mortality occurs; and in Edinburgh, instead of January following as the next most fatal month, it is November. Leith so far agrees with Edinburgh, that the mortality of January and November is nearly equal. In Glasgow, however, in Dundee, in Perth, and in Aberdeen, December is neither the most fatal nor even the second most fatal month. Nay, in the case of Glasgow and Aberdeen, the months of January, February, and March, exhibit a much higher amount of mortality than December; while in Perth, no fewer than the first five months of the year exceed in their mortality that of December.



The same difference is observed with regard to the month of least mortality in those eight towns. Thus, in Edinburgh and Aberdeen, August is the month of least mortality; in Leith, Glasgow, and Perth, June is the month of least mortality; in Paisley and Dundee, September is the month of least mortality; while in Greenock, it is the month of July.

Much of this difference of the effect of season on the mortality is probably due to difference in exposure or situation. Edinburgh, Leith, and Glasgow, and probably most other towns of Scotland, agree in this, that the months of greatest cold are January, February, and March. But the biting east and north-east winds which blow over Edinburgh and Leith with unmitigated severity during the months of November and December, raise the mortality of these months above those months whose actual thermometric cold is greater. When acting as honorary registrar of the mortality of Edinburgh and Leith, I had frequent occasion to notice the close connexion between the prevalence of these winds and the increase of mortality, and the influence of mild weather in again causing the mortality to sink. For additional facts on this subject, I beg to refer to the Quarterly and Annual Reports on the Mortality of Edinburgh and Leith, published in the "Edinburgh Medical and Surgical Journal," in 1846-7-8-9.

The next series of tables has for object the showing the principal diseases which prove fatal in the different towns of Scotland. The mortality tables for Edinburgh and Leith were drawn up on the plan of the English tables, adopting the same classification of diseases. Instead of reducing them, therefore, to the rude form of table used in the other towns, it has been considered better to give them separately, as they serve to give a much clearer idea of the diseases which prove fatal. Table XX. exhibits the classification of diseases, and the number of deaths under each class, during the years 1846-7-8, in Edinburgh and Leith; and Table XXI. gives the particular diseases, and number of deaths from each, also during these years.

TABLE XX.

*Showing the Number of Deaths under the Different Classes of Disease in Edinburgh and Leith during the Years 1846-7-8.*

CLASSES OF DISEASE.	Edinburgh.			Leith.		
	1846.	1847.	1848.	1846.	1847.	1848.
I. Epidemic, Endemic, and Contagious Diseases .....	1,141	2,679	2,468	198	285	568
II. Diseases of uncertain or variable seat .....	406	428	417	76	64	69
III. Diseases of Brain and Nervous System .....	482	516	382	75	84	73
IV. Diseases of Respiratory Organs .....	1,048	1,385	821	152	212	162
V. Diseases of Heart and Organs of Circulation .....	100	114	85	27	14	14
VI. Diseases of Stomach, Liver, and Organs of Digestion .....	493	598	562	76	106	117
VII. Diseases of Kidneys and Urinary Organs.....	21	39	22	3	2	3
VIII. Child-birth and Diseases of Organs of Generation...	61	87	76	15	16	14
IX. Rheumatism and Diseases of Joints, Bones, &c. ...	35	27	23	2	7	5
X. Diseases of Integumentary System .....	3	8	4	1	2	2
XI. Old Age .....	540	617	367	90	115	100
XII. Intemperance, Violent Deaths, Suicides, &c. ....	136	141	121	29	34	39
Causes not specified .....	128	67	127	57	14	46
Total deaths.....	4,594	6,706	5,475	801	955	1,212
Still-born .....	279	320	293	64	76	69

TABLE XXI.

*Showing the Mortality of the Fatal Diseases in Edinburgh and Leith during the Years 1846-7-8.*

DISEASES.	Edinburgh.			Leith.		
	1846.	1847.	1848.	1846.	1847.	1848.
I. Small Pox .....	34	163	96	2	64	5
Measles .....	183	217	55	32	16	9
Scarlet Fever .....	12	20	530	....	3	159
Hooping Cough .....	251	279	94	37	42	22
Croup .....	59	89	51	10	13	18
Diarrhoea .....	171	118	75	30	9	11
Dysentery.....	18	32	16	1	1	5
Cholera.....	47	11	478	12	0	185
Influenza .....	5	125	43	1	15	8
Typhus Fever .....	212	1,517	965	57	108	127
Erysipelas .....	47	59	43	8	11	12
Other Zymotics .....	52	49	22	8	3	7
II. Dropsy.....	133	154	142	25	26	14
Cancer .....	31	26	18	9	7	9
Debility .....	182	178	150	21	13	23
Sudden Death .....	14	15	17	6	11	9
Other odd Diseases .....	46	49	90	15	7	14
III. Cephalitis.....	22	29	26	7	7	3
Hydrocephal .....	190	165	113	28	29	31
Apoplexy .....	81	84	62	9	13	10
Paralysis .....	89	101	93	16	11	16
Epilepsy .....	12	12	13	3	1	1
Convulsions .....	19	39	24	3	8	3
Insanity .....	16	36	27	1	11	5
Delirium Tremens .....	23	24	3	2	2	....
Other Brain Diseases .....	30	26	31	6	2	4
IV. Bronchitis .....	39	113	16	12	27	6
Pneumonia .....	233	246	126	30	71	24
Asthma.....	73	118	66	6	14	10
Consumption .....	639	799	533	89	93	113
Pleurisy .....	13	21	10	2	1	4
Other Lung Diseases .....	51	88	70	13	6	5
V. Heart Diseases.....	100	114	85	27	14	14
VI. Teething .....	135	118	112	25	18	21
Inflammation of Bowels .....	121	206	246	11	38	56
Tabes Mesenterica .....	142	161	129	22	34	29
Liver Disease .....	53	54	40	6	7	4
Other Bowel Diseases .....	43	59	35	12	9	7
VII. Kidney and Urinary .....	21	39	22	3	2	3
VIII. Child-birth .....	42	74	63	13	13	10
Generative Organ Diseases ....	19	13	13	2	3	4
IX. Rheumatism.....	14	11	5	....	5	1
Joint and Spine Diseases.....	21	16	18	2	2	4
X. Ulcers, Skin.....	3	8	4	1	2	2
XI. Old Age .....	540	617	367	90	115	100
XII. Intemperance .....	7	9	2	1	....	1
Privation .....	4	3	....	....	....	....
Violence, Suicide.....	125	129	119	28	34	38
Not specified .....	128	67	127	57	14	46
Total.....	4,594	6,706	5,475	801	955	1,212



From these it will be seen, that the whole class of epidemic diseases fluctuates considerably; indeed, a proper average of this class of diseases could only be obtained by taking a long average of years. One fact, however, may be noted with regard to them, and that is, that with certain diseases, one epidemic disease usurps the place of another, and so destroys it, that during its prevalence, that other seems almost quite extinguished. This is notably the case with scarlet fever. When it prevails as an epidemic, measles and hooping cough, the usual fatal diseases of children, are in more or less complete abeyance, but immediately resume their prevalence and fatality on the disappearance of the epidemic scarlatina.

We are still too little acquainted with the causes which give rise to epidemics to be able to trace them to their causes. Each epidemic disease appears to be governed by laws of its own, which seem to be diverse from that which regulates others. The year in which one epidemic rages is in some cases found to correspond to that in which another also is prevalent, so that two epidemics are ravaging the population at the same period of time. In other years, however, the one epidemic is observed without the other, or the one seems even to take the place of the other; and all our inquiries have as yet failed to trace this coincidence or succession to any probable cause.

Some years, however, appear to be peculiarly favourable to the spread of epidemic influence, as, for instance, was 1847, in many, but not in all, the towns of Scotland. During that year, measles, small-pox, hooping cough, typhus fever, and influenza, prevailed simultaneously in Edinburgh and Glasgow, to a greater extent than they had been observed to do for many previous seasons. But in many of the other towns of Scotland no such connection was traced; and even in Leith, closely adjoining, as it is, to Edinburgh, measles that year was below the average in frequency and fatality.

Table XXII. gives a general view of the diseases which proved fatal in six of the chief towns of Scotland during a series of years, all the years mentioned being included, and the numbers in the table indicating the total deaths from these diseases during the years named. To render this table more easily comparable with Table XXI., Table XXIII. has been added, which gives the proportions per 1,000 deaths in which certain diseases proved fatal in the different towns. In drawing up this table, the "unascertained" deaths were necessarily omitted. The proportions are given for Aberdeen, though evidently too incorrect to allow of any confidence being placed in them.

From this table, we see that the manufacturing town of Paisley furnishes the largest proportion of deaths from consumption, no fewer than 208 out of every 1,000 deaths from all diseases falling victims to that fell disease. Next follows Glasgow, also a manufacturing town; then Greenock; then Dundee, also the seat of manufactures; then Perth; and lastly Edinburgh and Leith. In this last town, the proportional deaths from consumption was so low as 103 deaths only out of every 1,000 deaths from all diseases.

The high mortality from consumption in the manufacturing towns can be easily accounted for. The confinement of masses of people to the confined atmosphere of manufactories, and the breathing air which is constantly more or less filled with particles of dust, have been long

known to induce that disease. The very low mortality from that disease in Edinburgh and Leith is more difficult to explain, the proportion being not only much lower than in any other of the towns of Scotland, but also below that of most towns of England. Exposed as Edinburgh and Leith are, from their situations, to the full force of the biting easterly and northerly winds, it might *a priori* be expected that lung affections, and more especially consumption, would be more than usually prevalent. Such, however, is not the case; for, if we even allow for the increased general mortality in 1847 from fever, and in 1848 from cholera, the proportionate mortality from consumption would be below that of almost all towns in Scotland or England.

TABLE XXII.

*Showing the Number of Deaths from certain Diseases in Six Towns of Scotland during certain Years, (all inclusive).*

DISEASES.	Glasgow, 1838-44.	Dundee, 1839-45.	Paisley, 1845-48.	Greenock, 1843-48.	Aberdeen, 1837-41.	Perth, 1838-41.
Accidents and Suicides	1,385	249	77	50	72	55
Aged .....	4,898	894	958	186	404	410
Asthma .....	1,203	331	85	38	68	92
Bowel Complaints ....	6,648	1,000	851	231	114	134
Catarrh .....	943	?	?	15	32	62
Child-birth .....	621	87	75	18	17	9
Croup .....	1,211	208	87	39	15	47
Consumption .....	9,412	1,236	1,208	306	259	263
Dropsy.....	1,881	404	203	63	71	74
Typhus Fever .....	6,221	1,082	707	462	307	176
Brain Diseases.....	3,373	681	198	154	139	171
Heart Diseases .....	407	129	33	31	11	16
Hooping Cough .....	2,859	418	221	40	38	76
Inflammation .....	3,465	462	251	74	152	101
Measles .....	3,373	583	175	16	51	78
Nervous Diseases.....	449	135	20	2	85	81
Scarlet Fever .....	2,217	301	113	74	67	59
Small-Pox .....	2,138	354	119	41	57	49
Miscellaneous .....	2,296	926	382	259	195	90
Total ascertained .....	55,000	9,480	5,763	2,099	4,157	2,043
Not ascertained .....	1,349	318	400	104	4,213	57
Total.....	56,349	9,798	6,163	2,203	8,370	2,100

TABLE XXIII.

*Showing the Proportional Mortality of a few of the Principal Fatal Diseases in 1,000 Deaths from all Causes.*

	Edin- burgh.	Leith.	Glasgow.	Dundee.	Paisley.	Gree- nock.	Aber- deen.	Perth.
Consumption .....	119	103	171	130	208	143	62	128
Typhus Fever .....	163	102	113	114	122	220	73	86
Scarlet Fever .....	34	56	43	31	19	35	16	29
Measles.....	27	19	61	61	30	8	12	38
Hooping Cough .....	37	35	52	44	38	19	9	37
Small Pox.....	17	24	38	37	20	20	13	24
Croup .....	12	14	22	22	15	19	3	22
Brain Diseases.....	83	81	61	71	34	73	33	83
Heart Diseases .....	18	19	7	12	6	14	2	8



The probable reason, therefore, for this immunity, must be looked for in the circumstance that the keen air and constant breezes, which both towns enjoy in perfection, brace and strengthen the respiratory organs, and render them less liable to become the seat of those morbid deposits on which consumption depends.

Relative to the comparative frequency in the different towns of epidemic diseases, viz., typhus fever, scarlet fever, measles, small-pox, and hooping cough, little need be said, seeing the number of years under observation are too few to admit of any fair average being obtained. Besides, the calculations for Edinburgh, Leith, Greenock, and Paisley, were made from epidemic years, while those of Glasgow, Perth, Dundee, and Aberdeen, were made from years of mean mortality.

Relative to the other diseases, some rather interesting results are arrived at. Thus, croup seems to be most prevalent in the low-lying and sheltered towns, such as Glasgow, Dundee, Perth, and Greenock. Brain disease, on the other hand, appears out of all proportion numerous in Edinburgh, Perth, and Leith, and at a minimum in Paisley and Aberdeen; and heart disease seems so far to follow the same apparent influences as brain disease, inasmuch as it also is more prevalent in Edinburgh and Leith than in any of the other towns in the above table. Much reliance cannot, however, be placed on these proportions, as the registration of the causes of death is carried on in Scotland in too unsatisfactory a manner to admit of anything more than an approximation to the truth being attained.

In conclusion, permit me to remark, that I hope the facts now brought forward relative to the Vital Statistics of Scotland will have the effect of inducing those in authority to do something in the way of enabling us, with more accuracy, to ascertain the actual condition of our population. The approaching census, if taken as it ought to be, should give us the numbers of the insane in lunatic asylums and private madhouses; of the fatuous or idiots in workhouses, or boarded with their friends, or at large in the general population; of the blind; of the deaf and dumb; and, lastly, the number of married persons with issue, and of married persons who have had no issue.

Scotland also requires an uniform system of registration of births, deaths, and marriages; and if Government cannot carry a measure which shall prove satisfactory to all parties, what hinders it to pass a short Act, rendering it imperative on the clergy of the Established Church, which asserts the right of keeping such registers at present, to furnish annually to the Secretary of State, to the Lord Advocate, or to any authorised person, a complete list of all the marriages in their respective parishes, and of all the burials in the various cemeteries within each parish? If Government does not succeed in carrying out a new and uniform system of registration, it appears to me it is bound to enforce the proper keeping of the present parochial registers, and I can see no difficulty in the way, in so far as the marriages and burials are concerned. A similar return from the present registry of births would answer no end, inasmuch as not a third of the births over the country is registered; but were Government once seriously to contemplate such a beneficial measure for Scotland, means might easily be suggested by which this deficiency might be supplied.

## MISCELLANEOUS.

*Railway Traffic, Casualties, and Legislation.*

FROM the Parliamentary Returns it appears that the total number of persons of every description killed and injured on all the passenger railways open for traffic in Great Britain and Ireland during the half-year ending 30th June, 1850, amounted to 93 killed and 68 injured, and that they may be classed as follows:—

Three passengers killed and 33 injured from causes beyond their own control, 7 passengers killed and 3 injured owing to their own misconduct or want of caution, 25 servants of companies or of contractors killed and 17 injured from causes beyond their own control, 29 servants of companies or of contractors killed and 10 injured owing to their own misconduct or want of caution, 26 trespassers and other persons, neither passengers nor servants of the company, killed and 5 injured by crossing or walking on the railway, and 3 suicides.

The number of passengers conveyed during the half-year amounted to 31,766,503.

The length of railway open on the 31st December, 1849, was 6,032 miles, and on the 30th June, 1850, 6,308 miles; showing an increase during the half-year of 276 miles.

The following is a comparative statement of traffic upon all the railways in the United Kingdom during the half-year ending 30th June, 1850, and during the corresponding period in the previous year:—

	Periods to which this statement refers.		
	Half-Year ending 30th June, 1849.		Half-Year ending 30th June, 1850.
	Number of Passengers.		Number of Passengers.
1st Class .....	3,335,088		3,777,005
2nd Class .....	11,200,901		11,905,919
3rd Class.....	7,194,344		7,055,181½
Parliamentary Class .....	6,981,834		9,028,397½
Mixed .....	55,700		....
Total .....	28,767,867		31,766,503
Length in miles over which the traffic was conveyed, open at commencement of each period .....	5,127		6,032
Do. do., open at termination of each period .....	5,447		6,308
Receipts from Passengers .....	£	s. d.	£ s. d.
Do. do. ....	886,129	8 0	927,608 7 9¼
Do. do. ....	1,142,119	13 4	1,205,968 14 7¼
Do. do. ....	330,503	0 9½	307,317 5 2¼
Do. do. ....	462,713	17 3¾	569,462 18 1
Do. do. ....	1,207	16 1	....
Total .....	2,822,673	16 1	3,010,357 5 8½
Do. from Goods, Cattle, Parcels, Mails, &c. ....	2,633,263	1 3¼	3,046,933 12 8½
Total Receipts.....	5,455,936	16 9¾	6,057,290 18 4¾



The amount paid by the Post Office to the railway companies for the conveyance of mails during the year 1848 was 318,584*l.*, and during 1849 253,585*l.*; and for other services 82*l.* for each year.

The capital authorized to be raised during the session of 1850 amounted on shares to 1,920,000*l.*, and on loan to 2,195,632*l.*; and the reduction in the amount of capital authorized previous to 1850 amounted on shares to 646,700*l.*, and on loans to 214,900*l.*, making the total increase of capital 1,273,300*l.*, and of loans 1,980,732*l.*; together 3,254,032*l.*

## PROCEEDINGS OF THE STATISTICAL SOCIETY OF LONDON.

*Second Ordinary Meeting, Session 1850-51. Monday, 16th Dec., 1850.*

Lieut.-Colonel W. H. Sykes, Vice-President, in the Chair.

The following Gentlemen were elected Fellows:—

James Knight, Esq.  
Rawson Reid, Esq.

Alfred Gibson, Esq.  
C. Douglas Singer, Esq.

The following Paper was read:—

On the Quantity of Gold and Silver supposed to have passed from America to Europe since the discovery of the former country (1492) to the present time (1848). By J. Towne Danson, Esq.

*Third Ordinary Meeting, 1850-51. Monday 20th Jan., 1851.*

Lieut.-Colonel W. H. Sykes, Vice-President, in the Chair.

Trelawny W. Saunders, Esq., was elected a Fellow.

Mr. Fletcher read a Paper on the Vital Statistics of Scotland. By Dr. James Stark.

## THE MARRIAGES, BIRTHS, AND DEATHS,

REGISTERED IN THE DIVISIONS, COUNTIES, AND DISTRICTS OF ENGLAND,

*For the Quarter ended 30th September, 1850,*

AS PUBLISHED BY AUTHORITY OF THE REGISTRAR-GENERAL.

THIS Return comprises the Births and Deaths registered by 2,189 Registrars in all the districts of England during the Summer quarter ending September 30th, 1850; and the Marriages in more than 12,000 churches or chapels, 2,869 registered places of worship unconnected with the Established Church, and 623 Superintendent Registrars' Offices, in the quarter that ended June 30th, 1850. The Return of marriages is not complete; but the numbers wanting are inconsiderable, and have been supplied from the Returns of previous years.

The general result of the return is favourable in a high degree: the marriages in the Spring quarter are more numerous than in any corresponding quarter of the last 12 years; so also are the births in the Summer quarter; and the deaths are 86,044 instead of 135,358, which they were in the quarter ending September, 1849, when cholera ravaged the chief towns of the kingdom. The decrease of deaths implies, necessarily, the decrease of sickness and suffering; the increase of marriages and births indicates improvement in the condition and prospects of the great body of the people.

The marriages in all England in the quarter ending June 30th, 1850, were 39,018. The numbers in the Spring quarter declined rapidly from 1846 to 1848, and rose still more rapidly up to 1850; thus following and portraying the state of the country.

The births are invariably more numerous in the first and second than in the third and fourth quarters of the year; and they are in the last fewer by 8,757 than in the previous (June) quarter; the number and the proportion to the population are, however, greater in this than in any of the corresponding quarters since 1839. The increase of births is greatest in London, in the West-Midland Counties, and in the North-Western Counties—Cheshire and Lancashire.

The excess of births registered over deaths in the quarter was 60,926; which, if all the births, were registered would be the natural increase of the population. In the same time 53,703 emigrants sailed from three ports of England; 1,394 from Plymouth, 7,684 from London, and 44,625 from Liverpool. This leaves a narrow margin for the increase of population; but many of the emigrants entered at the English ports are from Ireland, which has been for many years diffusing a stream of natives over England as well as America. The progress of the whole fixed and moving population of the country can only be determined accurately from a comparison of the returns of births and deaths, of emigrants and immigrants, with periodical enumerations.

The mortality is much below the average; and the public health has never been so good since 1845 as in the present quarter. The rate of mortality is 1·901 per cent. per annum. At this rate 1 in 211 persons living died in three months. The chances of living through this quarter were 210 to 1; the average chances of living through three summer months (1839-50), for persons of all ages, being 192 to 1.

In London 26 deaths from poison, 26 from burns and scalds, 53 from hanging and suffocation, 94 from drowning, 137 from fractures and contusions, 19 from wounds, and 19 from other violence were registered. The increase in the deaths from hanging, strangling, and suffocation is considerable. The increase in the deaths by poison also deserves attention. Some alteration of the law to regulate the sale of poisons seems to be required. Arsenic is tasteless in food; it is inevitably fatal; it can be detected in the body after death; and it can be procured by any person in shops almost as readily as sugar. The placing of the sale of a commodity under restrictions is attended with difficulties; but to nip in its bud the practice of domestic murder by the administration of a tasteless poison is worth the effort, and will count against much inconvenience.

The deaths in the workhouses, hospitals, and other public institutions were, 2,407, 1,953, and 1,719, in the three quarters of the year 1850: and of the 6,079, 3,498 were males, and 2,581 females. One in six deaths of the inhabitants of London took place in public institutions during the three quarters.

*Marriages Registered in the Quarters ending June 30th, 1846-50; Births and Deaths Registered in the Quarters ending September 30th, 1846-50, in the Divisions, Counties, and Districts of England.*

Population.	Marriages.		Births.		Deaths.	
	Registered in the Quarter ending the last Day of					
	June,		September,		September,	
	1846.....	37,111	1846.....	138,718	1846.....	101,663
1831..... 13,896,797	1847.....	35,197	1847.....	127,173	1847.....	93,435
	1848.....	34,721	1848.....	140,359	1848.....	87,636
1841..... 15,914,148	1849.....	35,908	1849.....	135,200	1849.....	135,364
Military 29,846	1850.....	39,018	1850.....	146,970	1850.....	86,044



## MORTALITY OF THE METROPOLIS.

Table of the Mortality in the Metropolis, showing the Number of Deaths from all Causes, in the Quarters ending September of the Four Years, 1847-48-49-50.

CAUSES OF DEATH.	Quarters ending Sept.*				CAUSES OF DEATH.	Quarters ending Sept.*			
	1847.	1848.	1849.	1850.		1847.	1848.	1849.	1850.
ALL CAUSES.....	13,187	13,503	27,109	11,578	III. Scrofula.....	68	86	85	80
SPECIFIED CAUSES.....	13,158	13,450	27,050	11,520	Tabes Mesenterica.....	306	250	282	238
I. Zymotic Diseases....	4,102	5,162	17,763	3,011	Phthisis or Con- sumption.....	1,581	1,534	1,506	1,508
SPORADIC DISEASES.					Hydrocephalus.....	415	351	293	357
II. Dropsy, Cancer, and other Diseases of uncertain or va- riable Seat.....	548	524	540	574	IV. Cephalitis.....	131	125	131	131
III. Tubercular Diseases..	2,370	2,221	2,266	2,183	Apoplexy.....	276	282	282	281
IV. Diseases of the Brain, Spinal Marrow, Nerves, and Senses	1,416	1,369	1,531	1,372	Paralysis.....	226	213	248	245
V. Diseases of the Heart and Blood-Vessels	369	377	455	424	Delirium Tremens..	29	33	61	55
VI. Diseases of the Lungs and of the other Organs of Respiration.....	1,021	973	1,211	1,032	Chorea.....	1	3	..	1
VII. Diseases of the Sto- mach, Liver, and other Organs of Digestion.....	969	858	861	748	Epilepsy.....	70	70	101	68
VIII. Diseases of the Kid- neys, &c.....	122	143	143	166	Tetanus.....	4	3	7	4
IX. Childbirth, Diseases of the Uterus, &c.)	146	103	118	116	Insanity.....	27	16	20	20
X. Rheumatism, Dis- eases of the Bones, Joints, &c.....	109	75	84	100	Convulsions.....	521	466	512	422
XI. Diseases of the Skin, Cellular Tissue, &c.)	23	27	15	16	Disease of Brain, &c.	131	158	166	145
XII. Malformations.....	54	44	49	43	V. Pericarditis.....	20	30	22	25
XIII. Premature Birth & Debility.....	298	254	364	370	Aneurism.....	18	19	19	20
XIV. Atrophy.....	481	339	458	361	Disease of Heart....	331	328	414	379
XV. Age.....	540	399	558	439	VI. Laryngitis.....	28	36	33	43
XVI. Sudden†.....	126	111	184	115	Bronchitis.....	330	357	422	380
XVII. Violence, Privation, Cold, and Intem- perance.....	464	471	450	450	Pleurisy.....	35	22	30	24
					Pneumonia.....	409	388	587	439
					Asthma.....	96	64	62	83
					Disease of Lungs, &c	123	106	77	63
					VII. Teething.....	163	117	153	121
					Quinsey.....	16	14	20	15
					Gastritis.....	24	24	22	32
					Enteritis.....	190	166	135	106
					Peritonitis.....	57	62	48	57
					Ascites.....	21	31	29	35
					Ulceration (of In- testines, &c.)..	41	30	31	28
					Hernia.....	23	25	28	21
					Ileus.....	45	38	40	33
					Intussusception....	18	17	15	11
					Stricture of the In- testinal Canal..	7	9	6	13
					Dis. of Stomach, &c.	102	75	73	53
					Disease of Pancreas	1	..	..	1
					Hepatitis.....	56	63	57	47
					Jaundice.....	41	40	41	52
					Disease of Liver....	158	144	156	125
					Disease of Spleen..	1	3	2	1
					VIII. Nephritis.....	5	7	7	10
					Nephria (or Bright's Disease)	..	39	20	33
					Ischuria.....	2	3	4	3
					Diabetes.....	9	7	8	9
					Stone.....	7	9	8	6
					Cystitis.....	10	8	10	8
					Stricture of Urethra	8	12	12	16
					Dis. of Kidneys, &c.	81	58	64	81
					IX. Paramenia.....	6	..	2	2
					Ovarian Dropsy....	3	12	14	20
					Childbirth, see Metria	91	57	61	57
					Dis. of Uterus, &c...	46	34	41	37
					X. Arthritis.....	3	..	3	1
					Rheumatism.....	45	45	44	53
					Disease of Joints, &c.	61	30	37	46
					XI. Carbuncle.....	3	6	2	9
					Phlegmon.....	7	8	7	3
					Disease of Skin, &c.	13	13	6	4
					XVII. Intemperance....	23	15	15	16
					Privation.....	16	2	12	2
					Want of Breast	..	59	69	57
					Milk, see Privation	..	..	..	..
					Neglect.....	..	4	3	1
					Cold, see Privation..	..	..	1	..
					Poison.....	..	15	20	26
					Burns and Scalds..	..	31	32	26
					Hanging, &c. ....	..	36	35	53
					Drowning.....	..	..	..	..
					Fractures and Con- tusions.....	425	116	96	94
					Wounds.....	..	156	131	137
					Other Violence....	..	26	18	19
					Causes not specified	29	11	18	19
						..	53	59	59

\* The mortality of the districts of Lewisham and Hampstead was included in the Metropolitan returns at the commencement of 1847, for the first time. Therefore the deaths for the previous year are not contained in the above table. In the quarter ending September, 1846, they were 192.

† Under the head of "sudden deaths," are classed not only deaths described as sudden, of which the cause has not been ascertained or stated; but also all deaths returned by the Coroner in vague terms, such as "found dead," "natural causes," &c., &c.

‡ In the years previous to 1848, "Worms" and "Infantile Fever" were classed together. The former, of very rare occurrence, is now placed to diseases of stomach, &c.

METEOROLOGICAL TABLE for the Quarter ending September 30, 1850.

NAMES OF THE PLACES.	Mean Pressure of Dry Air reduced to the level of the Sea.	Mean Temperature of the Air.	Highest Reading of the Thermometer.	Lowest Reading of the Thermometer.	Mean Daily Range of Temperature.	Mean Monthly Range	Range of Tempera- ture in the Quarter.	Mean Temperature of the Dew Point.	WIND.		Mean Amount of Cloud.	RAIN.		Mean Weight of Va- pour in a Cubic Foot of Air.	Mean additional weight required to saturate a cubic Foot of Air.	Mean Degree of Hu- midity.	Mean Whole Amount of Water in a Ver- tical Column of Atmosphere.	Mean Weight of a Cubic Foot of Air.	Height of Cistern of the Barometer above the level of the Sea.
									Strength.	General Direction.		Number of Days on which it fell.	Amount col- lected.						
Jersey .....	29.652	60.0	81.0	48.0	14.4	30.7	33.0	54.5	1.7	S.W. & N.W.	4.8	36	6.4	4.9	1.5	0.822	6.0	529	84
Guernsey.....	29.599	60.1	75.5	51.5	8.9	19.2	24.0	56.2	1.7	W. & E.	4.9	36	8.8	5.2	0.6	0.898	6.4	528	123
Helston.....	29.614	58.7	80.0	40.0	15.3	35.3	40.0	54.6	1.4	S.W. & N.W.	5.8	37	7.8	4.9	0.9	0.839	6.0	528	106
Falmouth.....	29.694	59.1	78.0	40.0	18.5	33.3	38.0	53.7	1.4	N.	6.6	33	10.8	..	..	..	..	..	120
Truro.....	29.600	58.5	77.0	39.0	14.8	34.3	38.0	53.7	1.0	N.	5.9	41	4.8	4.8	1.0	0.834	5.9	530	55
Torquay.....	29.598	60.5	77.0	47.0	12.2	24.3	30.0	52.8	2.3	N.	..	29	8.0	4.7	1.3	0.780	5.7	..	160
Exeter.....	29.589	59.1	81.6	40.7	15.8	35.7	40.9	53.1	1.7	N.	3.7	36	8.1	4.7	1.2	0.804	5.9	529	140
Uckfield.....	29.598	59.5	89.0	34.0	22.3	45.3	55.0	51.8	0.3	W.	..	35	7.4	4.5	1.5	0.747	5.5	528	180
Southampton .....	29.589	59.7	81.0	36.0	17.0	35.9	45.0	52.2	..	..	6.1	33	9.1	..	..	6.3	6.3	..	55
Royal Observatory Greenwich .....	29.609	59.6	87.0	39.0	18.6	38.0	48.0	52.2	..	N.E. & S.W.	..	39	6.1	4.6	1.2	0.788	5.6	527	159
Maidenstone Hill, Greenwich .....	29.608	58.5	84.3	39.6	14.6	35.9	44.7	54.8	..	N.E. & S.W.	6.8	33	5.7	5.0	0.7	0.872	6.1	529	107
St. John's Wood.....	29.649	57.5	83.0	38.0	16.0	27.0	45.0	49.6	..	..	..	46	5.6	4.1	1.2	0.779	5.1	530	150
Chiswell Street, London .....	29.650	61.2	80.0	46.0	21.4	37.3	34.0	51.5	..	..	6.5	37	7.5	4.4	1.4	0.716	5.5	527	..
Aylesbury.....	29.650	59.2	86.0	32.0	24.2	46.4	54.0	51.1	0.7	S.	..	37	7.5	4.4	1.4	0.765	5.4	525	284
Stone Observatory .....	29.600	57.8	85.5	33.0	19.9	42.0	52.5	50.7	..	S.W.	5.6	46	5.8	4.3	1.2	0.784	5.4	523	310
Hartwell House (Mr. Aylesbury) .....	29.580	58.6	88.0	32.0	23.4	46.0	56.0	52.6	0.9	N.N.W.	5.8	32	6.1	4.6	1.0	0.817	5.3	525	250
Hartwell Rectory .....	29.602	57.1	81.5	33.5	17.2	39.6	48.0	49.6	0.6	N.W. & S.W.	..	39	6.9	4.2	1.3	0.771	5.1	526	290
Linslade, Bucks .....	29.638	57.3	85.5	35.0	19.3	40.5	50.5	..	..	S.W.	7.2	43	7.0	..	..	..	..	..	313
Radcliffe Observatory, Oxford .....	29.604	58.0	84.5	36.5	15.8	36.6	44.5	51.5	1.9	N.E. & S.W.	..	38	8.0	4.5	1.0	0.813	5.5	528	270
Rose Hill, Oxford .....	29.604	58.0	83.5	35.0	19.6	40.9	48.5	52.4	0.6	Var.	7.1	38	6.6	4.6	1.1	0.806	5.7	529	210
Cardington (near Bedford) ..	29.536	57.8	81.0	41.0	16.8	34.0	41.0	52.8	..	S.W. & N.W.	6.9	43	10.2	4.7	0.9	0.838	5.7	530	23
Norwich .....	29.538	56.8	79.0	38.0	14.4	32.6	41.0	50.0	1.3	W.	7.5	31	6.1	4.3	1.1	0.791	5.2	527	175
Leicester Museum .....	29.610	57.1	80.8	37.5	14.6	36.6	43.3	51.3	1.1	N.W.	6.4	47	9.2	4.4	1.0	0.821	5.4	531	39
Holkham .....	29.557	57.3	87.3	33.0	21.6	45.2	54.3	53.1	0.4	Var.	6.5	47	7.1	4.7	0.7	0.865	5.8	529	103
Highfield House, Notts.....	29.586	56.5	82.0	..	..	28.0	42.0	52.8	..	S.E.	7.0	43	6.9	4.7	0.8	0.856	5.7	530	..
Derby.....	29.649	56.5	81.5	39.5	12.7	28.0	42.0	48.8	1.7	N.W.	..	44	7.7	4.1	1.3	0.763	5.0	528	260
Hawarden .....	29.592	58.1	80.9	46.3	10.2	24.9	34.6	53.0	1.3	N.W.	7.6	43	7.8	4.7	0.9	0.837	5.7	530	37
Liverpool Observatory .....	29.585	55.6	83.0	31.0	21.4	44.2	52.0	52.2	2.0	W.	6.7	48	6.7	..	..	..	..	..	115
Wakefield Prison .....	29.629	54.9	77.6	35.2	..	36.0	43.0	50.9	1.3	E. to W.	6.8	49	12.3	4.3	0.8	0.818	5.2	527	381
Stonyhurst Observatory .....	29.612	55.7	78.0	35.0	14.5	36.0	43.0	50.9	..	Var.	..	38	6.4	4.3	0.9	0.833	5.3	530	50
York .....	29.547	56.4	84.0	39.5	12.8	31.2	44.5	53.6	3.1	N.W.	..	43	12.5	4.6	0.6	0.880	5.5	532	80
Whitehaven .....	29.596	53.9	76.8	34.8	14.8	34.3	42.0	49.4	0.8	S. & W.	6.3	42	6.3	4.2	0.8	0.828	5.1	528	340
Durham.....	29.668	55.5	76.0	37.0	14.8	33.0	39.0	51.6	..	S.W. & E.	3.4	30	..	4.5	0.7	0.870	5.5	532	..
Newcastle .....	29.668	53.5	70.4	36.8	11.1	30.0	33.6	50.8	2.8	N.E. & S.W.	..	50	6.6	4.4	0.4	0.927	5.3	535	124
North Shields .....	29.555	55.8	79.9	39.0	14.7	33.2	40.9	49.8	..	..	3.8	..	8.0	4.2	1.0	0.810	5.2	530	121
Glasgow .....	..	56.3	81.0	37.0	20.0	39.0	44.0	49.1	1.9	Var.	..	31	6.2	4.4	1.2	0.792	5.0	..	250
Dumino .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

The mean of the numbers in the first column is 29.605 inches, and it represents that portion of the barometer due to the pressure of air; the remaining portion, or that due to the pressure of water, is 0.337 inch; the sum of these two numbers is 30.002 inches, and it represents the mean reading of the barometer, for the



## REVENUE.

*Abstract of the Net Produce of the Revenue of Great Britain in the Years and Quarters ending 5th January, 1850 and 1851; showing the Increase or Decrease thereof.—(Continued from page 373, vol. xiii.)*

Sources of Revenue.	Years ending 5th January.			
	1850.	1851.	Increase.	Decrease.
	£	£	£	£
Customs.....	18,695,798	18,614,880	....	80,918
Excise .....	12,753,815	13,003,961	250,146	....
Stamps .....	6,365,475	6,095,641	....	269,834
Taxes.....	4,303,849	4,360,178	56,329	....
Property Tax .....	5,408,159	5,383,037	....	25,122
Post Office.....	806,000	820,000	14,000	....
Crown Lands.....	160,000	160,000	....	....
Miscellaneous .....	249,242	178,552	....	70,690
Total Ordinary Revenue ...	48,742,338	48,616,249	320,475	446,564
China Money .....	....	....	....	....
Imprest and other Moneys .	559,457	691,447	131,990	....
Repayments of Advances...	549,597	708,618	159,021	....
Total Income.....	49,851,392	50,016,314	611,486	446,564
Deduct Decrease .....			446,564	
Increase on the Year .....			164,922	

Sources of Revenue.	Quarters ending 5th January.			
	1850.	1851.	Increase.	Decrease.
	£	£	£	£
Customs .....	4,720,630	4,596,705	....	123,925
Excise .....	3,625,061	3,715,920	90,859	....
Stamps .....	1,509,860	1,459,721	....	50,139
Taxes.....	1,897,961	1,923,053	25,092	....
Property Tax.....	449,394	418,730	....	30,664
Post Office.....	152,000	152,000	....	....
Crown Lands.....	60,000	60,000	....	....
Miscellaneous .....	58,408	20,391	....	38,017
Total Ordinary Revenue ...	12,473,314	12,346,520	115,951	242,745
China Money .....	....	....	....	....
Imprest and other Moneys	125,087	132,246	7,159	....
Repayments of Advances ...	124,909	135,116	10,207	....
Total Income.....	12,723,310	12,613,882	133,317	242,745
Deduct Increase.....				133,317
Decrease on the Quarter .....				109,428

*Consolidated Fund Operations.*—The total income brought to this account in the quarter ending 5th January, 1851, was 12,625,016*l.* The total charge upon it was 8,117,865*l.*, leaving a surplus of 4,507,151*l.*

The surplus Revenue, after providing for the charges on the Consolidated Fund, and for the re-payment of Supply Services in the quarter ending 5th January, 1851, was 1,012,817*l.*

## CORN.

*Average Prices of Corn per Imperial Quarter in England and Wales, during each Week of the Fourth Quarter of 1850; together with the Average Prices for the whole Quarter.—(Continued from p. 374, vol. xiii.)*

Returns received at the Corn Office, Board of Trade.			Wheat.		Barley.	Oats.	Rye.	Beans.	Peas.
			Weekly Average	Aggregate Average of Six Weeks' regulating Duty.	Weekly Average	Weekly Average	Weekly Average	Weekly Average	Weekly Average
Weeks ending, 1850.			s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
October	5	.....	42 2	42 10	24 5	16 8	25 7	29 6	31 3
	12	.....	42 5	42 5	24 2	17 1	25 8	29 6	29 7
	19	.....	39 10	41 10	24 2	16 7	26 7	29 7	29 5
	26	.....	39 9	41 4	24 0	16 8	25 1	28 10	30 6
November	2	.....	40 2	40 11	24 1	17 3	23 6	29 1	29 2
	9	.....	40 5	40 7	24 4	17 0	26 7	29 0	29 11
	16	.....	39 11	40 2	24 1	17 2	24 2	28 9	29 0
	23	.....	39 11	40 0	24 1	17 3	29 6	28 9	29 4
	30	.....	40 3	40 1	24 6	17 1	23 6	28 5	29 2
December	7	.....	40 2	40 2	24 7	17 7	24 3	28 9	29 0
	14	.....	39 9	40 1	24 3	17 1	25 11	27 11	29 5
	21	.....	39 5	39 11	23 10	17 1	23 1	27 8	28 2
	28	.....	38 10	39 9	23 5	16 6	22 8	27 5	28 1
Average for the Quarter .....			40 2	..	24 1	17 0	25 1	28 8	29 4

*Foreign and Colonial Wheat and Wheat-Flour imported in each of the Months ending 10th October, 5th November, and 5th December, 1850; the Quantities Entered for Home Consumption during the same Months; and the Quantities remaining in Warehouse at the close of them.—(Continued from p. 374, vol. xiii.)*

[From the "London Gazette."]

## WHEAT.

Months ending.	Imported.			Quantities entered for Home Consumption.			In Bond at the Month's end.		
	Foreign.	Colonial.	Total.	Foreign.	Colonial.	Total.	Foreign.	Colonial.	Total.
1850.	qrs.	qrs.	qrs.	qrs.	qrs.	qrs.	qrs.	qrs.	qrs.
10th Oct.	449,062	1,595	450,657	451,022	1,595	452,617	11,642	9	11,651
5th Nov.	307,830	1,332	309,162	307,848	1,333	309,181	11,423	9	11,432
5th Dec.	315,675	3,908	319,583	316,227	3,909	320,136	10,693	9	10,702

## WHEAT-FLOUR.

Months ending.	Imported.			Quantities entered for Home Consumption.			In Bond at the Month's end.		
	Foreign.	Colonial.	Total.	Foreign.	Colonial.	Total.	Foreign.	Colonial.	Total.
1850.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.
10th Oct.	474,337	37,500	511,837	474,844	37,500	512,344	3,956	10	3,966
5th Nov.	521,674	74,160	595,834	521,674	74,160	595,834	2,958	11	2,969
5th Dec.	416,346	70,969	487,315	416,365	70,969	487,334	2,939	11	2,950



Fluctuation in the Stock and Share Market during the Year 1850.—(Continued from p. 375, vol. xiii.)

Stock and Shares.	Amount of Share.		Amount Paid.		Price on the 1st January,		Highest Price during the Year.	Lowest Price during the Year.
	£	s. d.	£	s. d.	1850.	1851.		
Consols.....					96½ 60s. P.m.	96½ 58s. P.m.	97½ 71s. P.m.	94½ 54s. P.m.
Exchequer Bills .....								
RAILWAYS—								
Brighton .....	Stock		100	0	79	87	88	75½
Caledonian .....	50	0	50	0	10½	10½	12½	6½
Eastern Counties .....	20	0	20	0	6½	6½	7½	5½
Great Northern .....	25	0	24	0	12½	17½	18½	8
Great Western .....	100	0	100	0	58	77½	80	46
London and North Western .....	Stock		100	0	111	123½	123½	99½
Midland .....	Stock		100	0	44½	47	50½	30½
North Staffordshire .....	20	0	17	10	7½	9	10½	5½
South Eastern .....	33	2	33	2	18½	22½	24½	12½
South Western .....	Stock		100	0	60½	77½	80½	54½
York, Newcastle, and Berwick .....	Stock		25	0	16½	18½	19½	10½
York and North Midland .....	50	0	50	0	17½	22½	26½	13½
—								
Boulogne and Amiens .....	20	0	20	0	7½	8½	9½	5
Northern of France .....	20	0	16	0	14½	15½	16	11½
East Indian .....	20	0	9	0	11½	11½	12½	10½

Average Price of Meat as sold in Smithfield Market in the Months ending Oct., Nov., and Dec., 1850.—(Continued from p. 375, vol. xiii.)

[From Returns sent to the Board of Trade.]

Description.	Oct.		Nov.		Dec.		Description.	Oct.		Nov.		Dec.	
	s.	d.	s.	d.	s.	d.		s.	d.	s.	d.	s.	d.
Inferior Beasts .....	2	4	2	8	3	4	Inferior Sheep .....	3	0	3	2	3	2
2nd class .....	2	10	3	0	3	6	2nd Class .....	3	4	3	6	3	10
3rd class (Large Prime)...	3	4	3	6	3	10	3rd do. ....	3	8	3	10	3	4
4th class (Scots) .....	3	8	3	10	4	0	4th do. (South Down) ...	3	10	4	0	4	0
							Lambs .....	...		...		...	
N.B.—Price of Meat at the rate of 8 lbs. Avoidupois to the stone, sinking the offal.													
							Coarse Calves.....	2	10	3	3	3	4
							Small Prime Calves .....	3	6	3	10	3	10
							Large Hogs .....	3	2	3	2	3	4
							Small Neat Porkers .....	4	0	4	0	4	0

## CURRENCY.

## BANK OF ENGLAND.

*An Account, pursuant to the Act of the 7th and 8th Victoria, c. 32, for the Weeks ending on Saturday, the 5th October, the 2nd and 30th November, and the 28th December, 1850.—(Continued from p. 376, vol. xiii.)*

[From the "London Gazette."]

## ISSUE DEPARTMENT.

	Weeks ending,			
	5th Oct., 1850.	2nd Nov., 1850.	30th Nov., 1850.	28th Dec., 1850.
	£	£	£	£
Notes issued .....	29,831,485	29,424,840	29,369,785	28,351,720
Government Debt ....	11,015,100	11,015,100	11,015,100	11,015,100
Other Securities .....	2,984,900	2,984,900	2,984,900	2,984,900
Gold Coin and Bullion ..	15,611,527	15,379,173	15,324,118	14,300,053
Silver Bullion .....	219,958	45,667	45,667	51,667
Total .....	29,831,485	29,424,840	29,369,785	28,351,720

## BANKING DEPARTMENT.

Proprietors' Capital....	14,553,000	14,553,000	14,553,000	14,553,000
Rest .....	3,566,136	3,111,393	3,085,738	3,107,784
Public Deposits .....	10,652,937	6,594,381	9,398,752	11,022,817
Other Deposits .....	8,899,290	9,932,226	9,789,794	9,147,039
Seven Day and other Bills	1,309,561	1,379,907	1,265,406	1,252,151
Total .....	38,980,924	35,570,907	38,092,690	39,082,791
Government Securities, including Dead Weight Annuities.. }	14,443,637	14,228,901	14,228,901	14,233,252
Other Securities .....	13,389,578	11,038,486	12,461,368	14,459,608
Notes .....	10,527,035	9,703,145	10,762,335	9,777,970
Gold and Silver Coin ..	620,674	600,375	640,086	611,961
Total .....	38,980,924	35,570,907	38,092,690	39,082,791

## COUNTRY BANKS.

*Average Aggregate Amount of Promissory Notes of Country Banks, which have been in Circulation in the United Kingdom, distinguishing the several Banks, or Classes of Banks by which issued in each part of the Kingdom, during the weeks ending 2nd November, 30th November, and 28th December, 1850.—(Continued from p. 376, vol. xiii.)*

Banks.	2nd November, 1850.	30th November, 1850.	28th December, 1850.
England—Private Banks .....	3,784,261	3,611,129	3,450,682
Joint Stock Banks .....	2,894,273	2,789,085	2,685,300
Scotland—Chartered, Private, and Joint Stock Banks..... }	3,318,618	3,594,247	3,345,649
Ireland—Bank of Ireland, Private and Joint Stock Banks..... }	4,994,306	4,943,670	4,856,959
Total.....	14,991,458	14,938,131	14,338,590



# QUARTERLY JOURNAL

OF THE

## STATISTICAL SOCIETY OF LONDON.

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MAY, 1851.

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*Seventeenth Annual Meeting of the Statistical Society of London.*

[Held at No. 12, St. James' Square, on Saturday, March 15, 1851.]

The Right Hon. THE EARL OF HARROWBY in the Chair.

The Minutes of the last Meeting were read and confirmed.

The Report of the Auditors was read.

It was moved and seconded, "That the Auditors' Report be adopted."—Carried unanimously.

THE EARL OF HARROWBY.—Perhaps it is now the opportunity for me to address to you a few words, to which course I have been urged by the representations of a friend, a worthy Vice-President, who takes a more active part in your proceedings than my engagements permit me to do—Sir John Boileau. But, certainly, when I stated my intention to Mr. Fletcher, I had no expectation of its being announced in the formal manner in which it has been, by circulars, as I have nothing to offer to you which deserves such a note of preparation. But my friend, Sir John Boileau, suggested to me that it might be a good example to set, if, on retiring from office, I took the liberty of entering, in some degree, into the subjects which had engaged our attention.

Perhaps, before I proceed, it may be desirable just to make a statement or two upon the material condition of the Society, and for that purpose I would make use of a few words which have been sketched out by the Secretary, who is intimately acquainted with all its transactions. The number of Members who have been elected within the last year has been 19, the number of withdrawals 10, leaving an excess of 9 on the total number of Fellows, the total being now 412. A like appearance is presented by the balance, which is now to be submitted to you, in which the liabilities show an increase of 12*l.* 14*s.*, but the balance in hand an increase of 31*l.*, notwithstanding that only one composition happens to have been paid in during the year. This progress simply promises to extinguish the excess of liabilities incurred by printing an extra number of the *Journal* in 1849,

and bring our balance-sheet to its normal appearance of a liability of one year's printing opposed to 867*l.* of stock, which has not varied for many years, and about 200*l.* of recoverable arrears. The whole revenue of the Society for the year being thus absorbed by its current expenditure and the cost of its Journal, any effort which can be made for increasing the efficiency of the Society's library—as so strongly urged in the last Annual Report of the Council—will have to be special; but for an object of such importance, a special effort ought assuredly to be made. To that point I shall be happy to call your attention.

Gentlemen, it is idle, in the midst of a party like this, assembled for the purpose of promoting the great object of statistics, to enlarge upon its general utility. It is, in fact, applying to the practical arts of life the great principles of Bacon; it is the proceeding by induction instead of by the old *a priori* road which science pursued for so many centuries. But, of course, like the pursuit of all science, it is not a mere mechanical application; it is one which requires a considerable application of the mind, and is not to be considered as a self-acting process. Any person, casting his eye over a mass of figures, is not, by that simple operation, put in possession of the state of the subject which those figures concern; and it seems to me, that it is always important to keep in mind that the perusal of such tables is only one element towards acquaintance with the subject [hear, hear]; and it is of the greatest importance in all things to be aware what any science cannot do, as well as what it can do. Now, if you were to submit a table of figures, in regard, say, to the medical profession, to a gentleman who had no previous acquaintance with the facts, I have no doubt that he would come to a great number of false conclusions. You must know a good deal more than that—more than the number of deaths in the year, even more than the number who have died of different diseases. You must know whether those circumstances are to be explained by any peculiar operations of the year, such as the peculiar epidemics that prevailed. A person knowing nothing more than the table would be, in fact, constantly drawing false conclusions from that which would bear to his mind probably the appearance of containing all the facts. But we must recollect that *all* the facts cannot be tabulated. What you can tabulate properly, are only materials towards the conclusion; but unless there is a running commentary furnished either by the intelligence and knowledge of the man who reads, or by the statist who furnishes the tables, the tables do not only not contain the whole information, but will very often lead to false conclusions. It is for that reason, I think, that a Society of this kind is especially useful, because these tables being produced in a Society of gentlemen who have all paid considerable attention to the subject, any deficiency in those tables is immediately suggested, conversation arises which leads to the correction of any errors, or the supplementing of any deficiencies, and a mass of information is collected, not only valuable on the subject at issue, but as training the mind to similar operations.

If, again, we were to take tables simply with regard to criminals, there is no man who, without considerable knowledge of the legal history, and more than the legal history, of the country, would not be misled by the inspection. He would see, perhaps, a consider-



able increase in the criminality of the country; but it is desirable to know what was included in the criminality at the beginning of the time, and what is now included; what changes have taken place in the laws, how much is now submitted to the public observation which once was not; whether crimes which once went under greater names and titles now wear lighter ones, and *vice versâ*; whether the jurisdiction of one tribunal has been transferred to another; whether matters which formerly were submitted to the adjudication of a formal tribunal are now handed over to a summary jurisdiction. If you come further to details, they are of most essential importance in ascertaining the value of the tables. For the purpose of ascertaining the real fact at issue, which is the real increase or decrease of crime, it is essential to know still more—you must take county by county. In one case you have a rural police, in another you have not; in one case you have a much stricter and more rigorous enforcement of the law than in others. I recollect, on a former occasion, I think at Glasgow, there were comparisons between the different amounts of drunkenness of different towns. Then came the question—what did the magistrates of one town hold to be drunkenness of a kind to be submitted to the law, and what the magistrates of another town held to be such? and rather an amusing test was submitted for drunkenness which would come within the law, namely, that as long as a man could walk on the curb-stone without going off, he was allowed to escape with impunity; but if he could not keep on the curb-stone, he immediately was handed over to the proper tribunal. This is a trifling matter which I have just mentioned, but there are a number of more important things to be considered—the extension of the population, and the employment of the population leading to the commission of a great number of little offences, which, if the magistrates are especially concerned with certain transactions, they look upon with extreme severity, and hence an apparent crop of offences, seen in the gross, which would very much mislead, unless a knowledge of the facts was possessed beyond that which the mere inspection of the tables would convey. As a magistrate of the county of Stafford, one is shocked to see the immense increase of crime; but it is somewhat of a satisfaction to analyse it a little, and to see how exceedingly trifling a great proportion of the crime is. It is unsatisfactory, in one point of view, as to the propriety of grave criminal proceedings in many instances; and it is satisfactory in another. A great proportion of the crime consists in picking up a handful of coal by a boy of ten years of age. Now many of the magistrates are coal owners, and they have yards all round, and they think it very important (I do not blame them) to guard that property by means of that protection. The consequence is, that, apparently, the amount of crime is increased, and the whole formula of courts of justice are brought to bear upon it, swelling our calendar to an enormous extent. I mention these simply as instances illustrating the general proposition.

Now, if we were to look at the statistics of circulation alone—the circulation of bank notes by itself—we surely should be very ill-informed as to the amount of means for promoting the exchange of commodities in actual operation, and yet, apparently, the Bank issues should be considered a sufficient test. But if we look back to

the amount of circulation at the beginning of the present century, and see how little it varies from the amount at the present moment, and compare the amount of pecuniary transactions in the one case and in the other, which have to be carried on apparently by that same means of exchange, we should be extremely ill-informed if we did not take into our consideration the immense economy of exchange which has taken place by clearing houses and bills of exchange, and every kind of mercantile facility, which, in fact, makes the circulation, which, fifty years ago, represented one amount of transactions, to be quite valueless for purposes of comparison with the circulation of the present time.

In regard to vital statistics, it seems to me that there is another occasion for extreme caution in forming conclusions simply from tables, without a very accurate investigation of almost every case that is cited. How can the vital statistics of a town, with a fixed population, growing, if I might be allowed the use of a botanical term, *endogenously* from within, be compared with the circumstances of a town which is growing by accretions from without—*exogenously*. The proportions of age, the proportions of sex, would be entirely different in the two cases. Any conclusion, therefore, drawn from the amount of population, and the bare number of deaths out of that population, as indicating the salubrity or insalubrity of such places, would, considering the different circumstances of the different places affected, lead to the most false results. Now I take the town which my noble friend on my right hand (Lord Overstone) is very familiar with—the town of Northampton—an endogenous town—one growing from within by its own self-expansion. You will find there a population consisting probably of a certain proportion of children and so on, all in a most normal condition. Take the town of Glasgow, growing by rapid accretions from without, growing by a great number of able-bodied people of all kinds coming in the flower of their life; how different will be the proportion of the different elements of population in the two places, and how false would be any conclusion that could be drawn from any state of mortality in the two, in which the varying circumstances of age, consequent on the different circumstances of the two populations, were not fully taken into consideration. There is a striking instance of the importance of such considerations at the present moment. If we look to those very interesting Reports submitted every year by the Registrar-General, which are so extremely valuable for statistical purposes, we shall find something upon a point which excites a good deal of interest at the present moment, namely, the proportion of our Roman Catholic population in England. I have heard Mr. O'Connell state that there were 3,000,000 Roman Catholics in England. The Registrar-General looks to the ratio between marriages and population, which he takes at 1 to 123 or 125 (I forget which), and he finds the result would be little more than 300,000. And if our Roman Catholic population were entirely endogenous—growing from within by natural process, that conclusion would be impregnable; but I imagine that we must look for the source of its growth, in a very great degree, in immigration, for the most part, of persons coming ready married—provided with wives, as we know most Irishmen are, and therefore not creating the number of marriages which otherwise would be due to the numbers now resident in this country. I conceive,



therefore, that, if we come to the conclusion that 300,000 or thereabouts is really the number of Roman Catholic population in this country, putting it on the usual proportion of marriages to population, we shall not come to a completely correct conclusion.

Now, with regard to education, again, there is also another source, I think, of misleading, from the simple inspection of numbers. I have seen statements put forward imploring assistance for the introduction of schools, upon a statement that there were so many children between the ages of 3 and 15, or 5 and 15—so many thousand children, say in Bethnal Green, with respect to which I saw the statement, and that all those children ought to be in school, creating a most alarming picture of deficiency of education. I appeal to any gentleman who knows the circumstances of Bethnal Green. Open schools as you please, with any amount of support which you would get, the children of any such population will never remain ten years in school, either gratuitously or otherwise; their parents being in a condition in which the labour of such children is very early called into requisition. Therefore, if you take as your basis of the comparative supply of education, the simple number of children between certain ages, without looking at the condition in society or the industrial employment for which those children are required, and if you draw conclusions without regard to these considerations, you clearly will be very much misled as to the practical object which you ought to attain, namely, the providing education for all those whom you can by any means possibly induce to accept it.

These are instances which have occurred to me in the course of the morning, just as indicating the importance of considering tables merely as a step—a most important and essential step—but as only a step, in fact, to the investigation of any subject. They are indispensable as means; they convey the truth, but not the whole truth; and unless they are illustrated either by the knowledge of the person who reads or who supplies them, they are subjects of jealousy; and therefore I think it is that a Society like ours, which admits not merely tables, but a discussion of those tables, and brings the minds and the knowledge of various men engaged in the active pursuits of life to bear on the subject, is of the most essential importance.

There is one subject which attracted a good deal of the attention of the Society in the course of the last year, which I think ought not to pass entirely unnoticed. Perhaps the gentlemen present will remember that a Committee was formed of the Society to consider and offer suggestions in regard to the forthcoming Census, which is, you may say, the great statistical jubilee of our day; and a good number of points were suggested as meet matter for inquiry, but which, upon investigation, were thought undesirable to make the subject of it, at least in this form; and I am afraid that some public notice that has been taken of the form in which the Census is now apparently to be executed may give dissatisfaction to its conductors. At the same time I think it is our duty to give warning publicly of the points on which the present Census will probably rather mislead than give proper information. And perhaps I might take the liberty of urging again what I took the liberty of urging in another place, namely, that it is important in all statistical inquiries made by authority that nothing should be asked which you have not a right to ask, because it

will be only partially given, and if partially given, the partiality of it will only be partially known, and conclusions will be drawn as from full knowledge, full knowledge not being possessed. And another point is, that you should not ask questions which are not likely to be intelligently answered. It is better not to know than to think you know, and argue on knowledge not really possessed. Now, I am afraid that without any sort of evil intention—I am sure nobody can blame them—with a very laudable desire of collecting information, the conductors of the Census are neglecting some of those cautions which some of the wiser heads in this Society were anxious to instil into them. They are not asking what they are likely to get fully and fairly answered, and they are asking what is not likely to be understood. We have inquiries about private affairs, in regard to how much a person who keeps a private school makes, how much he pays his ushers, which I am afraid will rather unsettle and dissatisfy those to whom they are addressed, and which may, perhaps, impair the efficiency of the Census in other respects; because we know that people who are irritated in one respect are not so likely to do all they can to comply with your request, even where it is reasonable. But I think that the government are inclined to reconsider some of those points, and it would be a matter of the highest importance that this great statistical review of the condition of the country should be composed of such materials as can fully be relied upon as conveying the truth, the whole truth, and nothing but the truth.

Gentlemen, I do not think that I have much more to say to you upon the present occasion. I have before me a list of the papers which have been read before the Society since the last Report. They have not been quite so numerous, perhaps, as on some other occasions, but they have been, some of them, extremely valuable. We have not been wanting, thanks to Mr. Danson, in watching that most interesting process which is now going on under our eyes, namely, the increase of the bullion of the world at large, and which, I hope, will not escape our attention; but that we shall, if possible, try, by communication with foreign countries and with eminent merchants, to record facts from time to time, as fast as any knowledge on the subject arises, that we may be providing materials which hereafter may not be so easily available. Thanks to him also, we have had a very able review of the state of the commerce of France. We have had some interesting documents from Mr. Porter on the "Taxation of the Working Classes Self-imposed," having a high moral bearing as well as one of general social interest. Colonel Sykes, as usual, who is never wanting (hear, hear), has brought into the field some contributions from that unexhausted field of India. I only hope that he will not weary in the pursuit, but that he will give us from time to time a share of those mines of statistical wealth which are to be found in the documents of the East India Company, and which, in fact, exhibit the interests of a larger portion of the human race than were ever brought together before in one view at one time. We have had also various contributions on the subject of vital statistics. Of course there will be fluctuations from time to time. Some subjects will assume a temporary importance, and others will decline. We have had a most valuable paper from Mr. Fletcher, in regard to the relations of crime and igno-



rance, which have been made patent to the eye by a series of maps, which have excited the greatest attention, as I have the opportunity of knowing, in various parts of the country. And I believe, altogether, we are doing a work of infinite service to the community in calling attention, not only to the principles of statistics themselves, giving more accuracy, more fulness, more definiteness to the pursuit, assigning to them their proper limits, their proper province, removing the suspicion with which they are often looked upon as a mere kind of *hocus pocus*, as a mode of marshalling figures which can be arrayed in any way the marshaller may please; and we have, at the same time, the satisfaction of feeling that we have given an impulse to the investigation of the social condition of the poorer classes of the community, which is spreading its circle more widely, not only over our own country, but over the whole civilized portion of the globe; that we have given an impulse to social investigations of which the results cannot at the present moment be appreciated.

I beg leave to thank you, Gentlemen, for the kind manner in which you have attended to the observations I have made, and to apologize for the scanty attention I have been able to give to your affairs. My occupations in the country call me away almost entirely on the day of the meeting, and prevent me from having that amount of social intercourse, and of instruction from the meetings, which it would be my delight to enjoy if other circumstances did not interpose (applause).

LORD OVERSTONE.—Gentlemen, I am sure you will all feel, in common with myself, that the noble lord, who occupies the chair, is about this day to close his presidency over this Society, in a manner eminently consistent with that character for general intelligence, and for highly enlightened views, which all who know the noble lord, either in his public or private character, universally attribute to him. I am sure that, under such encouragement and example, it will be the wish of every Member that the Society should discharge, in an equally appropriate manner, that which is their duty, as I am sure it is their desire, on this occasion, in offering to the noble lord our acknowledgments for the great services which he has rendered to the Society, not only by the intelligence and kindness with which he has presided over its proceedings for the last two years, but by the address which he has just given. [Hear, hear.] As to the singular appropriateness of that address, in the topics to which it alluded, and in the manner in which the noble lord enforced them, it is impossible there can be two opinions. I feel them myself in a strong degree. I had the honour of being associated with this Society, in its Council, at its institution, and I then thought, and was strongly impressed with the apprehension, that there was in the constitution of this Society a point which involved considerable danger to its efficient progress. It was a Society which distinctly repudiated all that which ordinarily constitutes the interest of other societies, viz., the use of theoretical views, by which the imagination might be excited and the interest stimulated, confining its regard to a cold investigation and rigid attention to facts. In those circumstances, I always felt that there were two dangers—first, from a want of adequate interest to enable us to continue our proceedings with efficiency, and, secondly, a danger, which certainly is a danger, of accumulating facts idly and unprofitably. The noble lord, in his

address, has most justly and usefully directed his attention to the mode of accumulating facts, and to the purposes for which they are to be used. There can be no doubt that facts may be accumulated under the name of a Statistical Society in a perfectly unintelligent and unprofitable manner, or they may be accumulated under some systematic arrangement and for some definite and beneficial purpose. We may proceed like mere children accumulating pebbles on the sea shore, and heaping them up into one useless mass, or we may accumulate facts under the guidance of sound principles, and make our accumulations more like the collections of the mineralogist and the geologist, putting together the various fragments he collects, but putting them together in order—collected with a view to an ultimate purpose. It is impossible to separate these things altogether, even in a Society which professes only to accumulate facts, and which embodies in its motto that these facts are to be used by others—*aliis exterendum*. But I am sure that these considerations must impress on the Society most strongly the importance of the observations which our President has addressed to us; and I trust that those observations, duly borne in mind by this Society during its coming labours, will tend to render its exertions more interesting to the Members at the time, and more profitable to the community in their ultimate effects. If they tend, in the slightest degree, to accomplish that result, the labours of the noble lord, in presiding over this Society for two years, will be eclipsed by the services which he has rendered to the country by the observations he has now made. It is under these circumstances that I have now to propose that we make our acknowledgments to the noble lord for his past services, and for his services on this day, by tendering to him the thanks of the Society. [Applause.]

SIR CHARLES LEMON.—I beg leave to rise to second the motion, and after the observations of Lord Overstone, I feel that I have very little or nothing to add to what he has said, as a claim on the acknowledgments of all the company present, or in the way of observation to Lord Harrowby. Your lordship has very plainly pointed out what has been the course of our proceeding in past time, and, I think, has given us some hints which we shall find it of the utmost importance to apply in future. You have, in fact, shown the most complete and entire appreciation of the nature and objects of the Society and also of its effects, and I confess that you have extended the field of those effects rather further than I was prepared before to acknowledge, not only on the literature and knowledge of this country, but that its effects have also been extended to all parts of Europe. Lord Overstone just now drew our attention back to what occurred at the commencement of the Society. I was one of the earlier Members, and I do certainly recollect, and with some little pride I acknowledge it at the present moment, that the fears which existed in the minds of many have not been realized. There were apprehensions that politics would creep in among us, that we should be engaged in speculations not simply theoretical and philosophical, such as have prevailed here, but that we should ramble into other fields and excite undue warmth. That was particularly the feeling with Mr. Hallam; but without reducing our Institution to that dry material which a simple collection of facts would present, indulging even to a certain extent in theory, and



allowing ourselves to draw conclusions from the facts brought before us, I think that in no one instance have we by any means incurred that which would justify the fears which unquestionably were entertained in the minds of those who first instituted the Society; and in considering the qualities which have preserved us in that equilibrium, I know no person so distinguished by them as the noble lord whom we now have as our President. I will not say another word, but simply second the motion which has been made to offer our best thanks to Lord Harrowby.

COLONEL SYKES.—I beg to be allowed to add my mite of acknowledgment to your lordship for the address we have had on this occasion, and for the example which you have set; an example which I hope to see followed in future times, because not only is it advantageous to the interests of the Society, but it is also instructive to the Members, and I beg leave to congratulate your lordship on commencing a new era, and to thank you in the name of the Society. The justice of the observations you have made has been felt by most of our Members, that figures are not necessarily statistics, that their value depends upon the manner in which they are got together, and that it is quite necessary, for the deduction of a legitimate argument from them, that all the relations of their origin should be known. The French have a happy adage—

“Avec des chiffres on peut faire tout ce qu’on veut.”

There is no doubt that such is the case, and we have constant proofs of it exhibited in the House of Commons and elsewhere. But such a perversion of statistics could not possibly take place if the parties who use those facts would use them honestly and with the intentions with which they were originally collected; and if the opposite parties were only sufficiently masters of the manner in which those figures misused were put together, they could turn their opponents' deductions to their discomfiture. I do think that, so far as this Society has gone, our honesty of purpose has enabled us to avoid dangers. Sir Charles Lemon has said, the fear was, that this Society might break down upon politics and religion. I am happy to say that we have never had in this Society, or in the British Association, discussions which could endanger the stability of the Institution or the good feeling between the Members on either one subject or the other, and I feel quite assured that the good sense of the Society will always keep us free from any such risks. With regard to the collection of facts, I am sure that Lord Harrowby did not mean to discourage individual exertion.

LORD HARROWBY.—Hear, hear.

COLONEL SYKES.—We have had proofs in this Society of what can be done by individual exertion. We have had committees on the state of education and on other subjects. The information on all these subjects was given voluntarily, but the parties engaged in collecting it took good care, as far as was within their power, to ascertain that what they recorded as facts literally were facts, with the attendant circumstances; and therefore, although voluntary information is probably not so satisfactory as information given with a penalty attached to it if it be untrue, still we must not lose sight of one of our sources of inform-

ation, and one of the aids on which the Society must rely, namely, obtaining voluntary information. We cannot always obtain it under a penalty, but we must then endeavour to do it as we can, and *quantum valeat*, we must put our own value on the information so obtained.

The motion having been put to the meeting by Lord Overstone, was carried unanimously.

THE EARL OF HARROWBY.—I must trouble you for a moment, Gentlemen, merely to thank you for the very kind manner in which you have received the very inadequate observations which I have offered, which are just the result of an hour or two's consideration of the points at issue; but I can hardly do so without observing, with regard to what fell from Colonel Sykes, that I, by no means, wish to discourage information of any kind. My great caution is to avoid instituting inquiries in such a way as to make us think that we get all, when we only get partial information. If we go with a sense of our position, and we say we cannot get all, but we get what we can, and we argue with that feeling of modesty which arises from that state of things, the information is most valuable; but if we profess to get all, and think we get all, when we only get partial information, then I think we are very seriously misled.

Before I sit down, as I am afraid I shall be called away in a few minutes to a distant part of the country, perhaps you will allow me to call to your attention one very important deficiency in our Institution at the present moment, which is in the library. When we look round the walls of these two rooms, we certainly do not see them furnished in a way which becomes the Statistical Society of London; and if we have the opportunity of showing to distinguished foreigners in this year some little hospitality, such as becomes the Members of different nations pursuing common objects, I think we should be rather glad to show the shelves somewhat better furnished, and I cannot help suggesting that it might be the subject of the early consideration of the Library Committee, or of some other body that might be constituted for the purpose, whether some means could not be taken very early for the extension of our provision in that respect—whether, for instance, if the gentlemen were to consider together, according to their respective branches of special knowledge, and to say our *desiderata* are such and such, and the list of *desiderata* were put in circulation, we might not, by private contributions, either from libraries or in a pecuniary point of view, each one giving a book or the means of purchasing one, make an effort this year to furnish our library in a manner more appropriate to our pretensions; and I believe it would extend the usefulness, as well as the appearance and dignity, of the Institution. This place would be more sought after if parties who were pursuing any subject felt pretty good security that, as to anything concerning statistical inquiry—

Quicquid agunt homines, nostri est prorogo libelli.

they would be sure, on the shelves of our rooms, to find something that would assist them. I would therefore leave the matter to my noble friend as a legacy, whether he and the Council around him would not suggest some means by which we may make this a jubilee year for our library, and which will fit us to assume the position which



devolves upon us. I beg to thank you for your kindness in carrying the motion which you have done. [Applause.]

MR. PORTER.—I have been requested, on the part of the Council, to bring forward a little matter of business which I believe can only be properly performed at a meeting of this kind. We are tenants here of the London Library, and most of us are aware that there is an Act of Parliament which exonerates from the payment of certain taxes bodies brought together for scientific purposes, and where profit is not a matter thought of in what they undertake; but in order to bring them within that rule, it is necessary that they should have a rule within themselves to this effect, that no dividend, gift, division, or bonus in money, should be made by the Society unto or between any of the Members. There is no gentleman here who imagines that he is going to get a dividend, gift, division, or bonus in money, from the stock or possessions of the Statistical Society, and therefore I do not think you are doing much against your interest in agreeing to this resolution. Be that as it may, it is my duty to propose to you, that, as an addition to the regulations of this Society, no dividend, gift, division, or bonus in money, shall be made by the Society unto or between any of the Members.

MR. HEYWOOD.—I second that.

The motion was then put to the meeting, and carried unanimously.

MR. FARR.—Will your lordship allow me to give an explanation of this question relating to teachers and so on. As far as regards private schools, it is stated on the face of the paper, that proprietors of strictly-private establishments are not required to answer questions 11, 14, and 15. Those are all the questions that relate to their financial concerns. It is rather important that that should be clearly understood. The reports in the newspapers which appeared yesterday did not perceive that. Certainly it would be extremely inquisitorial to ask private parties to furnish information of that nature. I believe the Government, also, are going to make the whole of this inquiry, as far as regards churches and schools, voluntary.

DR. TRUMAN.—It has been suggested to me by some gentlemen sitting near me, and it is a suggestion in which I entirely concur myself, but it is one which I would rather leave to the Council, that the address which your lordship has just delivered shall be printed and published in the transactions of the Society. I think the great utility of the address will be to direct the attention of persons not hitherto much occupied with statistics to the bearings that they have—to show that there is not that rigid formality about them, that they do really embrace subjects in general, and are not confined to particular subjects. And as I consider that the publication and distribution of such an address will very likely forward the objects of the Society, I beg leave to propose that the address just delivered from the chair be printed with the ordinary transactions, or otherwise distributed as the Council may think proper.

MR. FLETCHER.—I may mention that it is most probable that the Council you elect to-day will find it desirable to collect the observations which have fallen from his lordship to-day, and to put them on record. It was imagined that they would be well worthy of being placed on record, and I hope they will, in fact, hold the place of an annual report.

*Abstract of RECEIPTS and EXPENDITURE from the 1st JANUARY to the 31st DECEMBER, 1850.*

RECEIPTS.				EXPENDITURE.			
	£	s.	d.		£	s.	d.
To Balance in the hands of the Treasurer . . . . .	32	16	6	By Rent . . . . .	150	0	0
" " Secretaries . . . . .	1	15	0½	Salaries . . . . .	155	0	0
Arrears of { 4 for 1848 . . . . . £8 8 0 }	35	14	0	House Expenses . . . . .	30	0	11
Subscriptions, { 13 1849 . . . . . 27 6 0 }	562	16	0	Printing . . . . .	200	0	0
Subscriptions, 268 for 1850 . . . . .	21	0	0	Stationer . . . . .	11	17	3
Composition . . . . .	27	11	2	Editing and Advertising Journal . . . . .	59	14	6
Dividends . . . . .	55	10	10	Parcels, including Delivery of Journal and Postages . . . . .	1	17	4
Sale of Journal . . . . .				Library . . . . .	6	13	7
	£737	3	6½	Fire Insurance . . . . .	2	10	0
Assets, December 31, 1850:—				Messrs. Parker, Commission on Sale of Journal . . . . .	5	11	1
Cash Balance . . . . . £60 17 2				Standidge for Maps . . . . .	35	0	0
Petty Cash Balance . . . . . 4 14 2½				Miscellaneous . . . . .	13	7	6
Price of Fixtures to be returned at end of lease . . . . . 31 12 0				Cash Balance . . . . .	60	17	2
	97	3	4½	Petty Cash Balance . . . . .	4	14	2½
				Total . . . . .	£737	3	6½
Stock in 3¼ per Cent., Reduced £569 17s., cost £567 . . . . . } " 3 per Cent. Consols £328 15s. 4d. " £300 . . . . . }	867	0	0				
Arrears of { 1 for 1841, £2 2s. . . . . } Subscriptions, { 3 for 1842, 6 6 . . . . . } { 4 for 1843, 8 8 . . . . . } { 7 for 1844, 14 14 . . . . . } { 11 for 1845, 23 2 . . . . . } { 13 for 1846, 27 6 . . . . . } { 23 for 1847, 48 6 . . . . . } { 34 for 1848, 71 8 . . . . . } { 37 for 1849, 77 14 . . . . . } { 52 for 1850, 109 4 . . . . . }	388	10	0	Liabilities, December 31, 1850:—			
Deduct one-third . . . . . 259 0 0				Printer . . . . .	£360	16	8
				Stationer (two years) . . . . .	29	5	1
				Oilman . . . . .	4	11	8
				Coals . . . . .	1	5	0
				Total Liabilities . . . . .	£395	18	5
Total Assets . . . . . £1,223 3 4½							

We have audited the above account, and find a balance due to the Society of £65 11s. 4d.

(Signed)

F. G. P. NEISON,  
HORATIO LOVE,  
R. THOMPSON JOPLING.

February 26, 1851.



*Mortality and Chief Diseases of the Troops under the Madras Government, European and Native, from the Years 1842 to 1846 inclusive, compared with the Mortality and Chief Diseases of 1847. By LIEUT.-COLONEL W. H. SYKES, F.R.S.\**

THE following tables are extracted from the official Report of the Medical Board to the Madras Government, and comprise the Royal as well as the Company's troops, and possess great interest, from exhibiting, separately, the mortality from nine of the principal diseases to which the troops were subject in each division of the army, so that the local character of the climate of the respective stations is shown, as influencing the development of particular diseases, or mitigating or increasing their fatal effects. That these local climatorial influences are important, is manifested by the facts, that the per centage mortality for five years, amongst Europeans, varies from 2·353 per cent., in the Mysore Division, to nearly 6 per cent. in the Ceded Districts and Hyderabad Subsidiary Forces, and 6·022 per cent. in the Northern Division; and amongst the Native troops, from 0·808 per cent. in Malabar and Canara, to 8·937 per cent. in China. To enable the eye to follow uninterruptedly the effects of the same disease in different localities, I have drawn up tables (Tables LIII. to LVI.) which place the per centage mortality of each disease in the same vertical columns, and a glance from the top to the bottom of the column shows at once the relative intensity at each place. For instance, amongst the Europeans, with the exception of cholera, there is but one station (Nagpore) where the mortality from fevers exceeds 1 per cent. of the strength, and there are but three stations (Malabar and Canara, Hyderabad, and the Tenasserim provinces) where the mortality exceeds 1 per cent. from dysentery. In the other seven diseases, there are but two instances where the mortality exceeds a half per cent. The liver disease, usually considered so formidable to European constitutions, at only one station (Hyderabad) amounts to seven-tenths per cent. Amongst the Native troops, again, excepting cholera, there is not a single station in Madras at which the other eight diseases produced a mortality of even a half per cent. Fevers in the Tenasserim provinces caused a mortality of six-tenths per cent.; and rheumatism, at Aden, of five-tenths. China, unhappily, stands by itself. During the six years the Madras Native troops were there, fevers, diarrhoea, and dysentery, told with fatal effects. This table, then, and a similar table for the number of cases, afford the means of comparing the intensity of the same diseases at different stations; it remains for the physicist to inquire how far the local circumstances of soil, mephitic marshes, periodical winds, moisture or dryness, or other atmospheric phenomena, ventilation, drainage, diet, modes of living, or social or moral habits, appear to influence the several diseases; and knowledge so obtained could necessarily be

\* I do not purpose making any comparisons between the results in the following tables and those shown in the valuable Contribution to the Vital Statistics of the Madras Army, by the late Sir James Annesly. It will suffice to say that the mortality amongst the European troops is materially lessened in modern times, while that of the Native troops remains much the same.

turned to profitable account, in bringing into operation such expedients as might affect the agents within human control. That a mere change of climate, even within a narrow range of latitude, may give a very considerable development to diseases which were previously scarcely manifest, is shown in the Native troops of the Madras army sent to serve in China. In the Madras territories, the per centage mortality amongst the Sepoys from diseases of the chest, which during the five years from 1842 to 1846, could not be counted by the second place of decimals per cent. (except in the Centre Division), and ranging from 1 in 1181 men to 1 in 5773, mounted in China to the first places of decimals, or 1 in 517. That this is no accidental circumstance, is indicated by the period of time over which the mortality runs. In 1847, there was only 1 death from diseases of the lungs in 888 Sepoys; still it is nearly seven times greater than in India. The same observations apply with great force to fevers, diarrhoea, and dysentery. In the Tenasserim provinces, there was only 1 death from diarrhoea in 405 men; while in China, there was 1 in 34 men. But I am anticipating an analytical review of the tables.

Another characteristic of the Medical Report is a table of the mortality amongst Europeans after certain periods of residence in India. Although relating to limited numbers, it may be of some importance to the actuary in estimating the value of European life in the tropics, at least as far as the effects of climate upon Europeans can be estimated, with the European soldier as a type.

A third characteristic of the Medical Report is the result of experiments to determine the amount of heat to which the soldier's head is exposed on the line of march, in which the helmet, shako, or Sepoy's turban, is without or with a white covering, and the interior cavity of the head gear without or with moisture: the results are highly instructive.

The following tables, from 1842 to 1846, inclusive, relate to the diseases and mortality of 59,218 Europeans, embracing those of the Royal army as well as those of the Company, and 363,726 natives; and for the year 1847, to 11,303 Europeans and 67,015 native soldiers. These masses are classed in fourteen divisional commands, forces, and stations, namely, Presidency Division, Centre Division, Southern Division, Northern Division, Mysore Division, Malabar and Canara, The Ceded Districts, Hyderabad Subsidiary Force, Nagpore Subsidiary Force, the Tenasserim provinces, Saugor, Southern Mahratta country, Aden, and China; so that, in fact, the area within which the troops are serving extends from the longitude of Aden  $45^{\circ}.3$ , to the longitude of Hong Kong  $114^{\circ}.22$ , and from north latitude  $8^{\circ}.5$  (Cape Cormorin), up to  $22^{\circ}.50$  north latitude in Saugor; the area consequently embracing both monsoons and many varieties of climate. Nevertheless, the European troops serving under the Madras Government have a very considerably smaller mortality than is experienced by the troops of the Bengal and Bombay Governments; and this result is in confirmation of the facts I formerly published in the Society's Journal, respecting the mortality of the Indian army. The present tables, however, embrace the Royal as well as the Company's troops, which the former tables did not. I will not dwell upon the returns from the respective divisions, but, after the insertion of the tables, give a compendious view of the results they offer.



## I.—EUROPEANS.

	Strength.	Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracia.		Rheuma- tism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Presidency Division .....	7,395	87	49	1,459	9	537	13	628	9	661	40	100	14	772	3	1,042	1	28	2	5,314	140	9,947	189
Per centage of Treated to Strength .....		1.176		19.729		7.261		8.492		8.938		1.352		10.439		14.090		0.378		71.859		134.509	
Ditto of Deaths to do. ....		0.662		0.121		0.175		0.121		0.540		0.189		0.040		0.013		0.027		1.893		2.555	
Ditto do. to Treated .....		56.321		0.616		2.420		1.433		6.051		14.000		0.388		0.095		7.142		2.634		1.900	

## II.—NATIVES.

Presidency Division .....	23,093	484	213	3,320	55	30	8	436	45	202	14	90	4	1,161	18	588	5	142	20	6,453	382	12,326	500
Per centage of Treated to Strength .....		2.095		14.376		0.129		1.888		0.874		0.389		5.027		2.546		0.614		27.943		55.375	
Ditto of Deaths to do. ....		0.922		0.238		0.034		0.194		0.060		0.017		0.077		0.021		0.086		1.654		2.165	
Ditto do. to Treated .....		44.008		1.656		26.666		10.321		6.930		4.444		1.550		0.850		14.084		5.919		4.056	

## For the Year 1847.

## III.—EUROPEANS.

Presidency Division .....	1,338	2	2	116	4	54	7	154	2	48	7	17	5	75	...	342	...	3	...	811	27	1,694	41
Per centage of Treated to Strength .....		0.149		8.669		4.035		11.509		3.587		1.270		5.605		25.560		0.224		60.612		126.606	
Ditto of Deaths to do. ....		0.149		0.298		0.523		0.149		0.523		0.373		...		...		...		2.017		3.064	
Ditto do. to Treated .....		100.000		3.448		12.962		1.298		14.583		29.411		...		...		...		3.329		2.420	

## IV.—NATIVES.

Presidency Division .....	4,342	19	11	391	9	8	2	66	9	24	1	14	3	218	3	110	...	42	6	892	42	1,811	71
Per centage of Treated to Strength .....		0.437		9.005		0.184		1.520		0.552		0.322		5.020		8.533		0.967		20.543		41.708	
Ditto of Deaths to do. ....		0.253		0.207		0.046		0.161		0.023		0.069		0.069		...		0.138		0.967		1.635	
Ditto do. to Treated .....		57.894		2.301		25.000		10.606		4.166		21.421		1.376		...		14.285		4.708		3.920	

TABLE Exhibiting the Admissions and Deaths from Nine Principal Diseases for Five Years, from 1842 to 1846 inclusive; also the Total Admissions and Deaths from all Diseases, &c.

V.—EUROPEANS.																							
	Strength.	Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracia.		Rheuma- tism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.		
Centre Division .....	11,088	278	165	1,595	23	579	19	1,124	38	1,225	67	205	24	975	10	1,615	10	46	10	7,642	366	14,655	470
Per centage of Treated to Strength .....		2·507		14·384		5·221		10·137		11·047		1·848		8·793		14·565		0·414		68·921		132·169	
Ditto of Deaths to do. ....		1·488		0·207		0·171		0·342		0·604		0·216		0·090		0·090		0·090		3·300		4·238	
Ditto do. to Treated .....		59·352		1·442		3·281		3·380		5·469		11·707		1·025		0·619		21·739		4·789		3·207	
VI.—NATIVES.																							
Centre Division .....	31,783	535	237	4,088	83	27	1	799	62	339	34	225	36	2,067	32	738	14	238	54	9,056	553	16,843	711
Per centage of Treated to Strength .....		1·683		12·862		0·084		2·513		1·066		0·707		6·503		2·321		0·748		28·493		52·364	
Ditto of Deaths to do. ....		0·745		0·261		0·003		0·195		0·106		0·113		0·100		0·044		0·169		1·739		2·237	
Ditto do. to Treated .....		44·299		2·050		3·703		7·759		10·629		16·000		1·548		1·897		22·689		6·106		4·272	
VII.—EUROPEANS.																							
Centre Division .....	2,943	...	...	675	9	146	13	217	4	486	56	65	5	234	2	454	3	13	1	2,290	93	3,856	124
Per centage of Treated to Strength .....		...		22·935		4·960		7·373		16·513		2·208		7·950		15·426		0·441		77·811		131·022	
Ditto of Deaths to do. ....		...		0·305		0·441		0·135		1·902		0·169		0·067		0·101		0·033		3·160		4·213	
Ditto do. to Treated .....		...		1·333		8·904		1·843		11·522		7·692		0·854		0·660		7·692		4·061		3·215	
VIII.—NATIVES.																							
Centre Division .....	6,388	18	6	543	9	9	3	69	5	69	...	25	3	305	5	172	1	57	15	1,272	47	2,789	85
Per centage of Treated to Strength .....		0·286		8·715		0·148		1·097		1·097		0·397		4·350		2·735		0·906		20·229		44·354	
Ditto of Deaths to do. ....		0·095		0·143		0·047		0·079		...		0·047		0·079		0·015		0·238		0·747		1·351	
Ditto do. to Treated .....		33·333		1·642		33·333		7·246		...		12·000		1·639		0·581		26·315		3·694		3·047	



IX.—EUROPEANS.

	Strength.	Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracia.		Rheuma- tism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Southern Division .....	4,453	115	63	2,052	135	353	9	934	5	431	22	59	8	378	...	822	1	7	2	5,131	140	9,284	165
Per centage of Treated to Strength .....		2.582		46.081		7.478		20.974		9.678		1.324		8.488		18.459		0.157		115.325		208.488	
Ditto of Deaths to do. ....		1.414		0.785		0.067		0.112		0.494		0.067		...		0.022		0.044		3.143		3.705	
Ditto do. to Treated .....		54.782		1.705		2.702		0.535		5.104		5.084		...		0.121		28.571		2.728		1.777	

X.—NATIVES.

Southern Division .....	33,477	1,664	750	8,436	75	52	9	749	22	453	34	181	20	2,068	9	720	6	107	23	14,430	948	23,970	1,034
Per centage of Treated to Strength .....		4.970		25.199		0.155		2.237		1.353		0.540		6.177		2.150		0.319		43.104		71.601	
Ditto of Deaths to do. ....		2.240		0.224		0.026		0.065		0.101		0.059		0.026		0.017		0.068		2.881		3.088	
Ditto do. to Treated .....		45.072		0.889		17.307		2.937		7.505		11.049		0.435		0.833		21.495		6.569		4.313	

For the Year 1847.

XI.—EUROPEANS.

Southern Division .....	1,027	1	...	468	3	73	1	101	1	92	5	24	...	166	...	344	...	2	...	1,271	10	2,049	13
Per centage of Treated to Strength .....		0.097		45.569		7.108		9.834		8.938		2.836		16.163		33.495		0.194		123.758		199.513	
Ditto of Deaths to do. ....		...		0.292		0.097		0.097		0.486		...		...		...		...		0.973		1.266	
Ditto do. to Treated .....		...		0.641		0.369		0.990		5.434		...		...		...		...		0.786		0.694	

XII.—NATIVES.

Southern Division .....	5,746	48	18	1,617	8	11	1	211	6	111	5	60	5	478	2	236	1	20	5	2,792	51	4,903	87
Per centage of Treated to Strength .....		0.835		28.141		0.191		3.672		0.931		1.044		8.318		4.107		0.348		48.590		85.328	
Ditto of Deaths to do. ....		0.313		0.139		0.017		0.104		0.087		0.087		0.034		0.017		0.087		0.887		1.514	
Ditto do. to Treated .....		37.500		0.494		9.090		2.843		4.504		8.333		0.418		0.423		25.000		1.826		1.774	

NORTHERN DIVISION.

TABLE Showing the Admissions and Deaths from Nine Principal Diseases amongst the European and Native Troops for Five Years, from 1842 to 1846 inclusive; also the Total Admissions and Deaths from all Diseases, &c.

XIII.—EUROPEANS.																							
	Strength.	Cholera.		Fever.		Liver.		Diarrhea.		Dysentery.		Thoracia.		Rheuma- tism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Northern Division .....	797	3	2	37	1	21	1	31	6	28	4	40	6	60	2	28	1	10	2	258	25	635	48
Per centage of Treated to Strength .....		0.376		4.642		2.634		3.889		3.513		5.018		7.528		3.513		1.254		32.371		79.673	
Ditto of Deaths to do. ....		0.250		0.125		0.125		0.752		0.501		0.752		0.250		0.125		0.250		3.136		6.022	
Ditto do. to Treated .....		66.666		2.702		4.761		19.354		14.285		15.000		3.333		3.571		20.000		9.689		7.559	
XIV.—NATIVES.																							
Northern Division .....	41,348	824	355	11,770	145	32	2	438	13	370	28	412	35	4,089	48	2,166	14	978	102	21,079	742	31,769	874
Per centage of Treated to Strength .....		1.992		28.465		0.077		1.059		0.894		0.996		9.889		5.238		2.365		50.979		76.833	
Ditto of Deaths to do. ....		0.858		0.350		0.004		0.031		0.069		0.084		0.116		0.033		0.246		1.794		2.113	
Ditto do. to Treated .....		43.082		1.231		0.250		2.968		7.567		8.495		1.173		0.646		10.429		3.520		2.751	
For the Year 1847.																							
XV.—EUROPEANS.																							
Northern Division .....	168	...	...	15	1	1	...	7	2	4	...	8	1	7	...	9	...	2	...	53	4	126	6
Per centage of Treated to Strength .....		...		8.928		0.595		4.166		2.380		4.761		4.166		5.357		1.190		31.547		75.000	
Ditto of Deaths to do. ....		...		0.595		...		1.190		...		0.595		...		...		...		2.380		3.571	
Ditto do. to Treated .....		...		6.666		...		28.571		...		12.500		...		...		...		7.547		4.761	
XVI.—NATIVES.																							
Northern Division .....	9,990	3	1	7,876	78	14	2	163	8	273	30	69	11	999	9	393	2	269	17	10,059	158	13,255	194
Per centage of Treated to Strength .....		0.030		78.832		0.140		1.638		2.732		0.690		9.999		3.933		2.692		100.683		132.672	
Ditto of Deaths to do. ....		0.010		0.780		0.020		0.080		0.300		0.110		0.090		0.020		0.170		1.581		1.941	
Ditto do. to Treated .....		33.333		0.990		14.285		4.907		10.989		15.942		0.900		0.508		6.319		1.570		1.463	



## XVII.—EUROPEANS.

	Strength.	Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracia.		Rheumatism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Mysore Division .....	9,261	127	44	1,233	13	663	22	391	8	1,104	64	105	13	669	3	2,468	4	12	2	26,772	183	12,186	218
Per centage of Treated to Strength .....		1.371		13.313		7.159		4.232		11.920		1.133		7.223		26.649		0.129		73.123		131.584	
Ditto of Deaths to do. ....		0.475		0.140		0.345		0.086		0.691		0.140		0.032		0.043		0.021		1.976		2.353	
Ditto do. to Treated .....		34.645		1.054		4.826		2.046		5.797		12.380		0.448		0.162		16.666		2.702		1.788	

## XVIII.—NATIVES.

Mysore Division .....	33,937	1,351	587	5,813	81	60	7	660	22	303	15	179	19	1,691	16	800	6	108	17	10,965	770	20,502	879
Per centage of Treated to Strength .....		3.992		17.179		0.177		1.950		0.895		0.529		4.997		2.364		0.319		32.405		60.590	
Ditto of Deaths to do. ....		1.734		0.239		0.020		0.065		0.044		0.056		0.047		0.017		0.050		2.275		2.591	
Ditto do. to Treated .....		43.449		1.393		11.666		3.333		4.950		0.946		10.614		0.750		15.740		7.023		4.277	

## For the Year 1847.

## XIX.—EUROPEANS.

Mysore Division .....	1,866	28	19	211	5	106	3	163	1	221	10	41	1	114	...	758	...	2	...	1,644	39	2,696	49
Per centage of Treated to Strength .....		1.500		11.307		5.680		8.735		11.843		2.197		6.109		40.621		1.106		88.102		144.480	
Ditto of Deaths to do. ....		1.018		0.267		0.159		0.033		0.535		0.053		...		...		...		2.090		2.625	
Ditto do. to Treated .....		67.857		2.369		2.830		0.613		4.524		2.439		...		...		...		2.372		1.817	

## XX.—NATIVES.

Mysore Division .....	8,313	5	2	3,106	10	21	1	119	2	93	5	45	4	474	1	350	...	100	6	4,313	31	7,025	57
Per centage of Treated to Strength .....		0.060		37.363		0.252		1.431		1.118		0.541		5.701		4.210		1.202		51.882		84.506	
Ditto of Deaths to do. ....		0.024		0.120		0.012		0.024		0.060		0.048		0.012		...		0.072		0.372		0.685	
Ditto do. to Treated .....		40.000		0.321		4.761		1.680		5.376		8.888		0.210		...		6.000		0.718		0.811	

## MALABAR AND CANARA.

TABLE Exhibiting the Admissions and Deaths from Nine Principal Diseases for Five Years, from 1842 to 1846 inclusive; also the Total Admissions and Deaths from all Diseases, &amp;c.

XXI.—EUROPEANS.																							
	Strength.	Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracia.		Rheuma- tism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.		
Malabar and Canara .....	4,843	26	13	396	7	419	20	508	5	978	71	37	10	331	1	932	1	11	3	3,638	131	7,845	150
Per centage of Treated to Strength .....		0.536		8.176		8.651		10.489		20.194		0.763		6.834		19.244		0.227		76.118		161.986	
Ditto of Deaths to do. ....		0.368		0.144		0.412		0.103		1.466		0.206		0.020		0.020		0.061		2.704		3.097	
Ditto do. to Treated .....		50.000		1.767		4.773		0.984		7.259		27.027		0.302		0.107		27.272		8.600		1.912	
XXII.—NATIVES.																							
Malabar and Canara .....	18,935	38	12	2,474	34	51	6	355	10	230	6	123	10	1,083	5	510	3	77	12	4,941	98	10,734	153
Per centage of Treated to Strength .....		0.200		13.165		0.269		1.874		1.214		0.649		5.719		2.693		0.406		26.094		56.688	
Ditto of Deaths to do. ....		0.163		0.179		0.031		0.052		0.031		0.052		0.026		0.015		0.063		0.517		0.808	
Ditto do. to Treated .....		51.578		1.374		11.764		2.816		2.608		8.130		0.461		0.588		15.584		1.983		1.425	
XXIII.—EUROPEANS.																							
<i>For the Year 1847.</i>																							
Malabar and Canara .....	1,110	...	...	87	1	146	2	169	...	179	19	27	8	195	2	289	...	2	...	1,694	32	2,184	37
Per centage of Treated to Strength .....		...		7.837		13.153		15.225		16.126		2.432		17.567		26.036		0.180		98.558		196.756	
Ditto of Deaths to do. ....		...		0.090		0.180		...		1.711		0.720		0.180		...		...		2.882		3.333	
Ditto do. to Treated .....		...		1.149		1.369		...		10.614		29.629		1.025		...		...		2.925		1.694	
XXIV.—NATIVES.																							
Malabar and Canara .....	3,648	...	...	554	10	7	1	83	4	51	3	22	1	225	2	163	1	37	6	1,142	28	2,251	39
Per centage of Treated to Strength .....		...		15.186		0.191		2.275		1.398		0.603		6.169		4.468		1.014		31.304		61.705	
Ditto of Deaths to do. ....		...		0.074		0.027		0.109		0.099		0.027		0.054		0.027		0.134		0.767		1.069	
Ditto do. to Treated .....		...		0.974		0.027		0.109		0.099		0.027		0.054		0.027		0.134		0.767		1.069	



## XXV.—EUROPEANS.

	Strength.	Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracic.		Rheumatism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Ceded Districts .....	8,558	378	157	1,419	4	298	6	220	2	354	17	61	4	411	...	1,073	1	10	2	4,224	193	5,883	212
Per centage of Treated to Strength .....		10.623		39.881		8.375		6.183		9.949		1.714		11.551		30.157		0.281		118.718		165.345	
Ditto of Deaths to do. ....		4.412		0.112		0.168		0.056		0.477		0.112		...		0.028		0.056		5.424		5.958	
Ditto do. to Treated .....		41.534		0.231		2.013		0.909		4.802		6.557		...		0.093		20.000		4.569		3.603	

## XXVI.—NATIVES.

		Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracic.		Rheumatism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Ceded Districts .....	24,057	899	388	6,199	58	32	3	377	16	271	17	88	10	2,925	21	928	3	175	34	11,064	550	17,461	598
Per centage of Treated to Strength .....		3.736		25.767		0.138		1.567		1.126		0.365		8.708		3.857		0.727		45.990		72.581	
Ditto of Deaths to do. ....		1.612		0.241		0.012		0.066		0.070		0.041		0.087		0.012		0.141		2.286		2.485	
Ditto do. to Treated .....		43.159		0.935		9.375		4.244		6.270		11.363		1.002		0.223		19.428		4.971		3.424	

## For the Year 1847.

## XXVII.—EUROPEANS.

		Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracic.		Rheumatism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Ceded Districts .....	989	...	...	195	1	114	6	157	2	61	1	21	1	106	...	577	...	2	...	1,233	11	1,997	12
Per centage of Treated to Strength .....		...		19.716		11.526		15.874		6.167		2.123		10.717		58.341		0.202		124.671		201.921	
Ditto of Deaths to do. ....		...		0.101		0.606		0.202		0.101		0.101		...		...		...		1.112		1.213	
Ditto do. to Treated .....		...		0.512		5.263		1.273		1.639		4.761		...		...		...		0.892		0.600	

## XXVIII.—NATIVES.

		Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracic.		Rheumatism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Ceded Districts .....	4,661	5	...	1,812	24	2	2	60	1	46	2	10	...	375	...	201	...	33	8	2,544	27	3,735	42
Per centage of Treated to Strength .....		0.107		38.873		0.042		1.287		0.986		0.214		8.045		4.312		0.708		54.580		80.133	
Ditto of Deaths to do. ....		...		0.300		0.042		0.021		0.042		...		...		...		0.171		0.579		0.901	
Ditto do. to Treated .....		...		0.772		100.000		1.666		4.347		...		...		...		2.424		1.061		1.124	

## HYDERABAD SUBSIDIARY FORCE.

TABLE Exhibiting the Admissions and Deaths from Nine Principal Diseases for Five Years, from 1842 to 1846 inclusive; also the Total Admissions and Deaths from all Diseases, &c.

XXIX.—EUROPEANS.																							
	Strength.	Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracia.		Rheuma- tism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Hyderabad Subsidiary .....	6,800	97	46	2,243	30	773	49	923	17	1,855	171	149	9	702	5	1,952	5	19	6	8,713	338	13,075	385
Per centage of Treated to Strength .....		1.426		32.985		11.367		13.573		27.279		2.191		10.323		28.705		0.279		128.132		192.279	
Ditto of Deaths to do. ....		0.676		0.441		0.720		0.250		2.514		0.132		0.073		0.073		0.088		4.970		5.661	
Ditto do. to Treated .....		47.422		1.337		6.338		1.841		9.218		6.040		0.712		0.256		31.578		3.879		2.944	
XXX.—NATIVES.																							
Hyderabad Subsidiary .....	47,935	1,969	804	15,452	104	88	9	868	21	630	31	203	23	2,676	17	1,463	6	90	15	23,439	1,030	34,819	1,148
Per centage of Treated to Strength .....		4.107		32.235		0.183		1.810		1.314		0.423		5.582		3.052		0.187		48.897		72.637	
Ditto of Deaths to do. ....		1.677		0.216		0.018		0.043		0.064		0.047		0.035		0.012		0.031		2.148		2.394	
Ditto do. to Treated .....		40.832		0.673		10.227		2.419		4.920		11.330		0.635		0.410		16.666		4.394		3.297	
For the Year 1847.																							
XXXI.—EUROPEANS.																							
Hyderabad Subsidiary .....	1,343	1	1	570	4	72	8	250	2	191	14	18	6	82	...	533	1	...	...	1,717	36	2,221	44
Per centage of Treated to Strength .....		0.074		42.442		5.361		18.615		14.221		1.340		6.105		39.687		...	...	127.848		165.376	
Ditto of Deaths to do. ....		0.074		0.297		0.595		0.148		1.042		0.446		...		0.074		...	...	2.680		3.276	
Ditto do. to Treated .....		100.000		0.701		11.111		0.800		7.329		33.333		...		0.187		...	...	2.096		1.981	
XXXII.—NATIVES.																							
Hyderabad Subsidiary .....	8,89½	63	15	2,030	20	8	1	79	5	79	3	25	6	375	1	273	1	19	1	2,951	55	4,660	68
Per centage of Treated to Strength .....		0.708		22.820		0.089		0.888		0.888		0.281		4.215		3.063		0.213		33.174		52.386	
Ditto of Deaths to do. ....		0.168		0.224		0.011		0.056		0.033		0.067		0.011		0.011		0.033		0.618		0.764	



## EUROPEAN TROOPS.

Corps.	Average Strength.	Remained.	Admitted.	Discharged.	Died.	Remaining.	Cholera.	Dysentery.	Fever.	Hepatic Diseases.	Disease of the Eye.	Rheumatism.	Veneral.	Other Complaints.	Average proportion of Sick in Hospital to numerical Strength, per cent.	Proportion of Deaths to the total Sick Treated, per cent.
Her Majesty's 84th Regiment .....	1,052	100	1,749	1,743	37	69	1	130	432	44	37	65	486	554	1664	2.0
1st Battalion Artillery .....	146	17	212	216	6	7	...	20	43	18	1	6	20	104	1451	2.62
C Troop Horse Artillery .....	102	7	153	152	1	7	...	1	74	3	3	6	18	48	1567	0.62

XXXIV.—TABLE Showing the Principal Diseases of the Nagpore Force for Five Years.

DISEASES.	EUROPEANS.										NATIVES.									
	1,238	1,315	1,304	1,331	358	6,816	6,420	6,176	5,951	5,793	1843.	1844.	1845.	1846.	1847.	1843.	1844.	1845.	1846.	1847.
	Admitted.	Admitted.	Admitted.	Admitted.	Admitted.	Admitted.	Admitted.	Admitted.	Admitted.	Admitted.	Admitted.	Admitted.	Admitted.	Admitted.	Admitted.	Admitted.	Admitted.	Admitted.	Admitted.	Admitted.
Average of Strength.....	580	902	751	975	221	1,073	1,717	864	1,704	1,269	16	15	14	23	7	16	15	14	23	10
Years.....	3	88	102	111	18	3	6	10	10	7	...	1	2	...	1	...	2	2	...	1
Fevers.....	151	133	134	158	37	172	291	211	198	208	4	2	3	3	22	4	...	3	...	6
Hepatitis .....	141	123	207	203	32	50	59	77	60	22	1	...	1	8	...	1	...	1	...	1
Rheumatism .....	2	1	11	32	...	31	19	153	244	...	16	...	46	101	...	3	...	3	...	...
Dysentery .....	181	258	172	118	39	78	55	64	64	...	1	1	3	2	...	3	...	2	...	2
Cholera .....	352	368	109	371	24	374	342	85	176	119	...	2	3	1	...	...	...	...	...	...
Diarrhoea .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Syphilis .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total .....	1,474	1,873	1,487	1,968	374	1,781	2,459	1,404	2,456	1,647	38	30	74	132	20	38	30	74	132	20

NAGPORE SUBSIDIARY FORCE.

TABLE Exhibiting the Admissions and Deaths from Nine Principal Diseases for Five Years, from 1842 to 1846 inclusive; also the Total Admissions and Deaths from all Diseases, &c.

XXXV.—EUROPEANS.

	Strength.	Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracia.		Rheuma- tism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Nagpore Subsidiary .....	5,394	58	31	3,515	70	421	17	819	24	760	40	66	3	667	6	885	4	20	4	7,211	199	10,558	249
Per centage of Treated to Strength .....		1.075		65.164		7.804		15.183		14.089		1.223		12.365		16.407		0.370		133.685		195.736	
Ditto of Deaths to do. ....		0.574		1.297		0.315		0.444		0.741		0.055		0.111		0.074		0.074		3.689		4.616	
Ditto do. to Treated .....		53.448		1.991		4.038		2.930		5.263		4.545		0.899		0.451		20.000		2.759		2.358	

XXXVI.—NATIVES.

Nagpore Subsidiary .....	23,105	541	222	7,770	100	38	7	422	10	299	7	70	13	1,276	17	820	6	135	32	11,371	414	18,058	507
Per centage of Treated to Strength .....		1.634		23.470		0.114		1.274		0.903		0.211		3.854		2.476		0.407		34.348		54.547	
Ditto of Deaths to do. ....		0.670		0.302		0.021		0.030		0.021		0.039		0.051		0.018		0.096		1.250		1.531	
Ditto do. to Treated .....		41.035		1.287		18.421		2.369		2.341		18.715		1.332		0.731		23.703		3.640		2.807	

For the Year 1847.

XXXVII.—EUROPEANS.

Nagpore Subsidiary .....	307	...	...	230	...	18	...	39	...	40	4	6	...	41	...	57	...	3	...	434	4	607	5
Per centage of Treated to Strength .....		...		74.918		5.863		12.703		13.029		1.954		13.355		18.566		0.977		141.368		197.719	
Ditto of Deaths to do. ....		...		...		...		...		1.302		...		...		...		...		1.302		1.628	
Ditto do. to Treated .....		...		...		...		...		...		...		...		...		...		0.921		0.823	

XXXVIII.—NATIVES.

Nagpore Subsidiary .....	5,726½	...	...	1,281	10	8	1	22	2	22	1	15	3	216	6	180	...	28	10	1,772	33	2,888	42
Per centage of Treated to Strength .....		...		22.368		0.139		0.384		0.384		0.261		3.771		3.143		0.488		30.942		50.429	
Ditto of Deaths to do. ....		...		0.174		0.017		0.017		0.017		0.053		0.104		...		0.174		0.576		0.733	
Ditto do. to Treated .....		...		0.750		19.500		0.990		4.545		29.000		0.787		...		...		...		...	



TABLE Exhibiting the Admissions and Deaths from Nine Principal Diseases for Five Years, from 1842 to 1846 inclusive; also the Total Admissions and Deaths from all Diseases, &c.

XXXIX.—EUROPEANS.																							
	Strength.	Cholera.		Fever.		Liver.		Diarrhœa.		Dysentery.		Thoracia.		Rheuma- tism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Tenasserim Provinces .....	4,290	47	20	1,439	12	242	9	667	9	659	43	413	13	237	2	230	..	11	3	3,945	111	6,455	121
Per centage of Treated to Strength .....		1.095		33.543		5.641		15.547		15.361		9.627		5.524		5.361		0.256		91.958		150.466	
Ditto of Deaths to do. ....		0.466		0.279		0.209		0.209		1.002		0.303		0.046		..		0.069		2.587		2.820	
Ditto do. to Treated .....		42.553		0.833		3.719		1.349		6.525		3.147		0.843		..		27.272		2.813		1.874	
XL.—NATIVES.																							
Tenasserim Provinces .....	14,984	56	28	2,407	39	18	...	664	37	204	13	155	12	1,091	22	497	6	139	34	5,231	191	6,999	281
Per centage of Treated to Strength .....		0.373		16.063		0.120		4.431		1.361		1.034		7.281		3.316		0.927		34.910		64.729	
Ditto of Deaths to do. ....		0.186		0.600		...		0.246		0.086		0.080		0.146		0.040		0.226		1.274		1.875	
Ditto do. to Treated .....		50.000		1.620		...		5.572		6.372		7.741		2.016		1.207		24.460		3.650		2.897	
For the Year 1847.																							
XLI.—EUROPEANS.																							
Tenasserim Provinces .....	100	...	...	18	...	3	...	6	...	6	...	2	...	6	...	4	...	...	...	45	...	106	...
Per centage of Treated to Strength .....		...		18,000		3.000		6.000		6.000		2.000		6.000		4.000		...		45.000		106.000	
Ditto of Deaths to do. ....		...		...		...		...		...		...		...		...		...		...		...	
Ditto do. to do. ....		...		...		...		...		...		...		...		...		...		...		...	
XLII.—NATIVES.																							
Tenasserim Provinces .....	1,741½	...	...	373	1	1	...	45	1	17	...	4	1	126	...	68	...	33	4	667	7	1,184	9
Per centage of Treated to Strength .....		...		21.418		0.574		2.583		0.976		0.229		7.235		3.904		1.894		38.300		67.987	
Ditto of Deaths to do. ....		...		0.574		...		0.574		...		0.574		...		...		0.229		0.401		0.516	
Ditto do. to Treated .....		...		0.268		...		2.222		...		25.000		...		...		12.121		1.049		0.760	

## CHINA.

XLIII.—TABLE Exhibiting the Admissions and Deaths from Nine Principal Diseases for Five Years, from 1842 to 1846 inclusive; also the Total Admissions and Deaths from all Diseases, &c.

	Strength.	Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracia.		Rheumatism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
China*	10,347	52	15	10,653	214	28	4	2,717	305	781	106	138	20	1,212	36	483	8	232	47	16,296	755	23,395	925
Per centage of Treated to Strength	.....	0.502		102.957.		0.270		26.258		7.548		1.333		11.713		4.668		2.242		157.494		226.133	
Ditto of Deaths to do.	.....	0.144		2.068		0.038		2.947		1.024		0.193		0.347		0.077		0.454		7.296		8.939	
Ditto do. to Treated	.....	28.846		2.008		14.285		11.225		13.572		14.492		2.970		1.656		3.017		4.633		3.953	

\* There is not any return of Europeans.

## XLIV.—For the Year 1847.

	Strength.	Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracia.		Rheumatism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
China	888	...	...	590	24	1	...	195	14	82	7	9	1	93	2	63	..	89	11	1,122	59	1,408	68
Per centage of Treated to Strength	.....	...		66.444		0.112		21.959		9.234		1.013		10.472		7.094		10.022		126.351		158.558	
Ditto of Deaths to do.	.....	...		2.702		...		1.576		0.787		0.112		0.225		...		1.238		6.444		7.659	
Ditto do. to Treated	.....	...		4.069		...		7.179		8.536		11.111		2.150		...		12.359		5.258		4.829	



TABLE Exhibiting the Admissions and Deaths from Nine Principal Diseases for Five Years, from 1842 to 1846 inclusive; also the Total Admissions and Deaths from all Diseases, &c.

XLV.—EUROPEANS.																							
	Strength.	Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracia.		Rheuma- tism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Aden.....	1,339	25	19	503	6	49	6	268	2	57	9	17	6	73	1	154	1	3	2	1,149	52	2,074	77
Per centage of Treated to Strength .....		1·869		37·565		3·659		20·014		4·256		1·269		5·451		11·501		0·224		85·810		154·891	
Ditto of Deaths to do. ....		1·418		0·448		0·448		0·149		0·672		0·448		0·074		0·074		0·149		3·883		5·750	
Ditto do. to Treated .....		76·000		1·192		12·244		0·746		15·789		35·294		1·369		0·649		66·666		4·525		3·712	
XLVI.—NATIVES.																							
Aden.....	4,187	8	5	464	7	13	...	25	...	27	1	53	3	459	22	144	3	69	13	1,258	54	2,840	90
Per centage of Treated to Strength .....		0·191		11·081		0·310		0·597		0·641		1·265		10·914		3·439		1·600		30·045		67·828	
Ditto of Deaths to do. ....		0·119		0·167		...		...		0·023		0·071		0·525		0·071		0·310		1·289		2·149	
Ditto do. to Treated .....		62·500		1·508		...		...		3·703		5·660		4·814		2·083		19·402		4·292		3·169	
For the Year 1847.																							
XLVII.—EUROPEANS.																							
Aden.....	112	...	...	22	...	2	...	22	...	5	...	4	...	12	...	15	...	...	...	82	...	131	1
Per centage of Treated to Strength .....		...		19·642		1·785		19·642		4·464		3·571		10·714		13·392		...		73·214		116·964	
Ditto of Deaths to do. ....		...		...		...		...		...		...		...		...		...		...		0·892	
Ditto do. to Treated .....		...		...		...		...		...		...		...		...		...		...		0·763	
XLVIII.—NATIVES.																							
Aden.....	1,494	73	25	389	4	1	...	67	3	24	2	6	...	156	10	41	...	18	6	775	50	1,566	68
Per centage of Treated to Strength .....		4·886		26·037		0·066		4·484		1·606		0·401		10·441		2·744		1·204		51·894		104·819	
Ditto of Deaths to do. ....		1·673		0·267		...		0·200		0·133		...		0·669		...		0·401		3·346		4·551	
Ditto do. to Treated .....		34·246		1·028		...		4·477		8·333		...		6·410		...		33·333		6·451		4·342	

## SAUGOR AND NURBUDDA TERRITORIES.

XLIX.—TABLE Exhibiting the Admissions and Deaths of Native Troops from Nine Principal Diseases for the Year 1846; also the Total Admissions and Deaths from all Diseases, &amp;c.

	Strength.	Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracia.		Rheumatism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Saugor and Nurbudda Territories ...	4,582	29	8	2,423	15	2	...	51	...	37	1	9	2	280	...	114	...	7	1	2,352	27	4,175	38
Per centage of Treated to Strength .....		0.632		52.880		0.043		1.113		0.807		0.196		6.110		2.487		0.152		64.426		91.117	
Ditto of Deaths to do. ....		0.174		0.327		...		...		0.037		0.043		...		...		0.021		0.589		0.829	
Ditto do. to Treated .....		27.586		0.619		...		...		2.702		22.222		...		...		14.285		0.914		0.910	

## L.—For the Year 1847.

	Strength.	Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracia.		Rheumatism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Saugor and Nurbudda Territories ...	4,272	...	...	1,987	9	1	...	35	...	39	2	16	2	308	...	206	1	11	3	2,603	17	3,660	25
Per centage of Treated to Strength .....		...		46.512		0.023		0.819		0.912		0.374		7.209		4.822		0.257		60.931		85.674	
Ditto of Deaths to do. ....		...		0.210		...		...		0.046		0.046		...		0.023		0.070		0.397		0.585	
Ditto do. to Treated .....		...		0.452		...		...		5.128		12.500		...		0.485		27.272		0.653		0.683	



SOUTHERN MAHRATTA COUNTRY.

II.—TABLE Exhibiting the Admissions and Deaths from Nine Principal Diseases for Five Years, from 1842 to 1846 inclusive; also the Total Admissions and Deaths from all Diseases, &c.

	Strength.	Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracia.		Rheuma- tism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Southern Mahratta Country.....	41,962	1,093	457	9,992	107	63	5	984	86	633	35	145	15	3,312	26	1,165	7	120	18	17,507	706	30,487	813
Per centage of Treated to Strength .....		2·604		23·812		0·150		2·344		1·508		0·345		7·892		2·776		0·285		41·720		72·653	
Ditto of Deaths to do. ....		1·089		0·254		0·011		0·085		0·083		0·345		0·061		0·016		0·042		1·682		1·937	
Ditto do. to Treated .....		41·811		1·070		7·936		3·658		5·529		10·344		0·785		0·600		15·000		4·032		2·666	

LII.—For the Year 1847.

	Strength.	Cholera.		Fever.		Liver.		Diarrhoea.		Dysentery.		Thoracia.		Rheuma- tism.		Venereal.		Dropsy.		Total of preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Southern Mahratta Country.....	1,009	..	..	134	..	..	..	4	..	25	2	5	..	194	1	48	..	8	..	418	3	536	4
Per centage of Treated to Strength .....		..		13·280		..		0·396		2·477		0·495		19·226		4·757		0·792		41·427		53·121	
Ditto of Deaths to do. ....		..		..		..		..		0·198		..		0·099		..		..		0·297		0·396	
Ditto do. to Treated .....		..		..		..		..		8·000		..		0·515		..		..		0·717		0·746	

LIII.—*Absolute Number of Cases of the Chief Diseases and Per Centage to Strength, from 1842 to 1846 inclusive.*

Europeans.		Natives.		Absolute Number of Cases of												Deaths per cent. ...					
Strength.	Total Deaths.	Strength.	Total Deaths.	Cholera.		Fevers.		Liver.		Diarrhœa.		Dysentery.		Thoracia.		Rheuma- tism.		Venereal.		Dropsy.	
				Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Presidency Division.....	7,395	23,093	500	87	484	1,459	3,320	537	30	628	436	661	202	100	90	772	1,161	1,042	588	28	142
Centre Division.....	11,088	31,783	711	278	535	1,595	4,088	579	27	1,124	799	1,225	339	205	225	975	2,067	1,615	738	46	238
Southern Division .....	4,453	33,477	1,034	115	1,664	2,052	8,436	333	52	934	749	431	453	59	181	378	2,068	822	720	7	107
Northern Division .....	797	41,348	874	3	824	37	11,770	21	32	31	438	28	370	40	412	60	4,089	28	2,166	10	978
Mysore Division .....	9,261	33,937	879	127	1,351	1,233	5,813	663	60	391	660	1,104	303	105	179	689	1,691	2,468	800	12	108
Malabar and Canara .....	4,843	18,935	153	26	38	396	2,474	419	51	508	355	978	203	37	123	331	1,083	932	518	11	77
Ceded Districts .....	3,558	24,057	598	378	899	1,419	6,199	298	32	220	377	354	271	61	88	411	2,925	1,073	928	10	175
Hyderabad Force .....	6,800	385	47,935	97	1,969	2,243	15,452	773	88	923	863	1,855	630	149	203	702	2,676	1,952	1,463	19	90
Nagpore Force .....	5,394	249	33,105	58	541	3,515	7,770	421	38	819	422	760	999	66	70	667	1,276	885	820	20	135
Tenasserim Provinces.....	4,290	121	14,984	281	47	56	1,439	242	18	667	664	659	204	413	155	237	1,091	230	497	11	139
Aden.....	1,339	77	4,187	90	25	8	464	49	13	268	25	57	27	17	53	73	459	154	144	3	69
China .....	..	..	10,347	925	..	..	10,653	..	28	..	2,717	..	781	..	138	..	1,212	..	483	..	132
Saugor .....	..	..	4,582	38	..	..	242	..	2	..	51	..	37	..	9	..	280	..	114	..	7
Southern Mahratta Coun- try .....	..	..	41,962	813	..	..	9,992	..	63	..	984	..	633	..	145	..	3,312	..	1,165	..	120
Total .....	59,218	2,284	363,726	8,551	1,241	9,543	15,891	89,080	4,335	534	1,513	8,112	5,452	1,252	2,071	5,275	25,390	11,201	11,144	177	2,617
Deaths per cent. ...	3.856*	2.076*	2.095	2.623	26.834	24.491	7.319	0.146	11.000	2.623	13.698	1.499	2.144	0.569	8.907	6.980	18.914	3.063	0.298	0.719	

\* Deaths per cent.



LIII\*.—Absolute Number of Deaths in the Chief Diseases and Per Centage to Strength, from 1842 to 1846 inclusive.

Absolute Number of Deaths in																		
	Cholera.		Fevers.		Liver.		Diarrhœa.		Dysentery.		Thoracia.		Rheumatism.		Venereal.		Dropsy.	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Presidency Division.....	49	213	9	55	13	8	9	45	40	14	14	4	3	13	1	5	2	20
Centre Division.....	165	237	23	83	19	1	38	62	67	34	24	36	10	32	10	14	10	54
Southern Division .....	63	750	35	75	9	9	5	22	22	34	3	20	..	9	1	6	2	23
Northern Division .....	2	355	1	145	1	2	6	13	4	28	6	35	2	48	1	14	2	102
Mysore Division .....	44	587	13	81	22	7	8	22	64	15	13	19	3	16	4	6	2	17
Malabar and Canara .....	13	12	7	34	20	6	5	10	71	6	10	10	1	5	1	3	3	12
Ceded Districts.....	157	388	4	58	6	3	2	16	17	17	4	10	..	21	1	3	2	34
Hyderabad Force .....	46	804	30	104	49	9	17	21	171	31	9	23	5	17	5	6	6	15
Nagpore Force .....	31	222	70	100	17	7	24	10	40	7	3	13	6	17	4	6	4	32
Tenasserim Provinces .....	20	28	12	39	9	..	9	37	43	13	13	12	2	22	..	6	3	34
Aden.....	19	5	6	7	6	..	2	..	9	7	6	3	1	22	1	3	2	13
China .....	..	15	..	214	..	4	..	305	..	106	..	20	..	36	..	6	..	47
Saugor .....	..	8	..	15	..	..	..	..	..	1	..	2	..	..	..	..	..	1
Southern Mahratta Country..	..	57	..	107	..	5	..	36	..	35	..	15	..	26	..	7	..	18
Total .....	609	3,681	210	1,117	171	61	125	599	548	342	105	222	33	289	29	87	38	422
Per centage loss—Deaths .....	1.028	1.012	0.354	0.307	0.288	0.016	0.211	0.162	0.925	0.094	0.177	0.060	0.055	0.079	0.049	0.023	0.064	0.116
Per centage of Cases .....	2.095	2.623	26.834	24.491	7.319	0.146	11.000	2.623	13.698	1.499	2.114	0.569	8.907	6.980	18.914	3.063	0.298	0.719

## MADRAS ARMY.

## LIV.—Absolute Number of Deaths and Per Centage to Strength for the Year 1847, together with Deaths for Nine Principal Diseases.

		EUROPEANS AND NATIVES.														Absolute Number of Deaths from			
Strength.	Deaths.	Cholera.		Fevers.		Liver.		Diarrhœa.		Dysentery.		Thoracia.		Rheumatism.		Venereal.		Dropsy.	
		Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Presidency Division.....	41	1,338	4,342	2	11	4	9	7	2	7	1	5	3	2	3	2	1	6	6
Centre Division.....	124	2,943	6,288	..	6	9	9	13	3	56	..	5	3	5	5	1	1	15	15
Southern Division .....	13	1,027	5,746	..	18	3	8	1	1	5	5	..	5	..	2	..	..	5	5
Northern Division .....	6	163	9,991	..	1	1	78	2	2	30	30	1	11	..	9	2	1	17	17
Mysore Division .....	49	1,866	8,313	19	2	5	10	3	1	10	5	1	4	..	1	..	..	6	6
Malabar and Canara .....	37	1,110	3,648	..	..	1	10	2	1	19	3	8	1	2	1	..	1	6	6
Ceded Districts .....	12	989	4,661	..	..	1	24	6	2	1	2	1	1	..	2	..	..	8	8
Hyderabad Force .....	44	1,343	8,895	1	15	4	20	8	1	14	3	6	6	..	1	1	1	1	1
Nagpore Force .....	5	307	5,727	..	..	..	10	..	1	4	1	..	3	..	6	..	..	10	10
Tenasserim Provinces.....	..	100	1,741	..	..	..	1	..	..	..	..	..	1	..	..	..	..	4	4
Aden .....	1	112	1,494	..	25	..	4	..	..	..	2	..	..	..	..	..	..	6	6
China .....	..	..	888	..	..	..	24	..	..	..	7	..	1	..	..	..	..	11	11
Saugor .....	..	..	4,272	..	..	..	9	..	..	..	2	..	2	..	..	..	1	3	3
Southern Mahratta Coun- try .....	..	..	1,009	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..	..
Totals .....	332	11,303	67,015	22	78	28	216	40	14	116	63	27	40	4	42	4	7	1	98
Deaths per Cent...	2·937	..	..	0·194	0·116	0·243	0·324	0·354	0·021	1·026	0·094	0·239	0·059	0·035	0·062	0·035	0·010	0·009	0·146



Summary of Deaths per Cent. from Nine Principal Diseases for Five Years, from  
1842 to 1846 inclusive.

## LV.—EUROPEANS.

	Strength of Troops.	Per Cent. Died.										
		Cholera.	Fevers.	Liver.	Diarrhœa.	Dysentery.	Thoracia.	Rheuma- tism.	Venereal.	Dropsy.	Of Nine Diseases.	All Diseases.
cy Division .....	7,395	0·662	0·121	0·175	0·121	0·540	0·189	0·040	0·013	0·027	1·893	2·555
Division .....	11,088	1·488	0·207	0·171	0·342	0·604	0·216	0·090	0·090	0·090	3·300	4·238
n Division .....	4,453	1·414	0·785	0·067	0·112	0·494	0·067	...	0·022	0·044	3·143	3·705
n Division .....	797	0·250	0·125	0·125	0·752	0·501	0·752	0·250	0·125	0·250	3·136	6·022
Division .....	9,261	0·475	0·140	0·345	0·086	0·691	0·140	0·032	0·043	0·021	1·976	2·353
and Canara Division...	4,843	0·368	0·144	0·412	0·103	1·466	0·206	0·020	0·020	0·061	2·704	3·097
istricts .....	3,558	4·412	0·112	0·168	0·056	0·477	0·112	...	0·028	0·056	5·424	5·958
ad Subsidiary Force ...	6,800	0·676	0·441	0·720	0·250	2·514	0·132	0·073	0·073	0·088	4·970	5·661
Subsidiary Force .....	5,394	0·574	1·297	0·315	0·444	0·741	0·055	0·111	0·074	0·074	3·689	4·616
rim Provinces .....	4,290	0·466	0·279	0·209	0·209	1·002	0·303	0·046	...	0·069	2·587	2·820
.....	1,339	1·418	0·448	0·448	0·149	0·672	0·448	0·074	0·074	0·149	3·883	5·750

## LVI.—NATIVES.

	Strength of Troops.	Per Cent. Died.										
		Cholera.	Fevers.	Liver.	Diarrhoea.	Dysentery.	Thoracia.	Rheuma- tism.	Venereal.	Dropsy.	Of Nine Diseases.	All Diseases.
ney Division .....	23,093	0·922	0·238	0·034	0·194	0·060	0·017	0·077	0·021	0·086	1·654	2·165
Division.....	31,783	0·745	0·261	0·003	0·195	0·106	0·113	0·100	0·044	0·169	1·739	2·237
a Division.....	33,477	2·240	0·224	0·026	0·065	0·101	0·059	0·026	0·017	0·068	2·831	3·088
n Division.....	41,348	0·858	0·350	0·004	0·031	0·069	0·084	0·116	0·033	0·216	1·794	2·113
Division.....	33,937	1·734	0·239	0·020	0·065	0·044	0·056	0·047	0·017	0·050	2·275	2·591
and Canara.....	18,935	0·163	0·179	0·031	0·052	0·031	0·052	0·026	0·015	0·063	0·517	0·808
istricts.....	24,057	1·612	0·241	0·012	0·066	0·070	0·041	0·087	0·012	0·141	2·286	2·485
ad Force.....	47,935	1·677	0·216	0·018	0·043	0·064	0·047	0·035	0·012	0·031	2·148	2·394
Force.....	33,105	0·670	0·302	0·021	0·030	0·021	0·039	0·051	0·018	0·096	1·250	1·531
rim Provinces.....	14,984	0·186	0·600	...	0·246	0·086	0·080	0·146	0·040	0·226	1·274	1·875
.....	4,181	0·119	0·167	...	...	0·023	0·071	0·525	0·071	0·310	1·229	2·149
.....	10,347	0·144	2·068	0·038	2·947	1·024	0·193	0·347	0·077	0·454	7·296	8·939
.....	4,582	0·174	0·327	...	...	0·021	0·043	...	...	0·021	0·589	0·829
a Mahratta Country ...	41,962	1·089	0·254	0·011	0·085	0·083	0·345	0·061	0·016	0·042	1·682	4·937

From the preceding tables it is seen that, for the five years, from 1842 to 1846, inclusive, the strength of the Europeans ranged from 797 in the Northern Division to 11,088 in the Centre Division; and the deaths from 48 in the former to 470 in the latter. For the year 1847 the strength ranged from 100 in the Tenasserim Provinces to 2,943 in the Centre Division; and, in regard to deaths, the 100 Europeans in the Tenasserim Provinces exhibited the singular fact of not having lost a single man, while 124 died in the Centre Division. The strength of the Native troops, for the five years, ranged from 4,187 at Aden to 47,935 at Hyderabad; and the deaths at any one station ranged from 38 at Saugor to 1,148 at Hyderabad, there being 4,582 men at Saugor, while the 4,187 at Aden lost 90 men. For the year 1847, the strength of the Native troops ranged from 1,009 men in the Southern Mahratta country to 9,991 men in the Northern Division; the deaths ranged from 4 men out of the 1,009 in the Southern Mahratta country to 194 in the Northern Division. The per centage of deaths (2,284) amongst the total Europeans (59,218), for the five

years, was 3·856 per cent.\*, being almost identical with the average mortality of the preceding twenty years: namely, 3·846 per cent. The per centage of deaths (8,551) amongst the Native troops (363,726) was 2·076 per cent., singularly approximating to the mortality of the preceding twenty years, viz., 2·095 per cent. For the year 1847, the deaths amongst 11,303 Europeans was as low as 2·937 per cent.; but, in the years 1835, 1836, 1838, 1839, 1841, 1843, and 1844, it had been even lower; in 1835 and 1838 scarcely exceeding 2 per cent., including Cholera; a healthiness rivalling that of a branch of the royal troops in England, viz., the Foot Guards, the mortality of which was represented at one time to be 2·16 per cent. Preliminary to entering on the influences of the chief diseases, some mention is necessary of the total amount of cases of diseases; in other words, the rate at which men are received into hospital for treatment; and in this matter a marked contrast exists between Europeans and Natives. The receptions into hospital amongst Europeans ranged from 147·7 per cent. in 1844, to 174·3 per cent. of strength in 1843. Amongst the Native troops, the receptions into hospital ranged from 66·6 per cent. in 1845, to 76·6 per cent. in 1846. For the year 1847, the cases of Europeans treated were 156·575 per cent., and of Native troops 77·64 per cent. of the strength. These numbers can only be approximations to the truth, as the same man may go several times into hospital during the year, and be counted in the returns as several men; but under any circumstances the contrast of the susceptibilities of Europeans to attacks of disease as compared with Natives is very marked. The intensity of the chief diseases in their final results indicates, that both Europeans and Natives suffer most, *in number of cases*, from fevers; the Europeans at the rate of 26·834 per cent., and the Native troops at the rate of 24·491 per cent.; but the mortality was in very different ratios at the different stations. For instance, in the Nagpore subsidiary force, the Europeans lost from fever, in the five years, 1·297 per cent., but their strength in 1847 being reduced to 307 men, they had no death by fever. At no other station did the deaths by fevers amount to a half per cent. with the exception of the Southern Division, where they amounted to 0·785 per cent. The Madras Native troops at no station lost more than one-third per cent. from fever, while in China they amounted to 2·068 per cent., and for the year 1847 to 2·602 per cent.

Next in intensity to fevers comes venereal, the CASES of which, amongst Europeans for the five years, amount to 18·914 per cent.; but the mortality from this loathsome disease, although 29 in number, never amounted to one in a thousand of the strength, except in the Northern Division, where it amounted to 1 in 797, and in the Centre Division to 1 in 1,108. In the year 1847, in the Ceded Districts, the *cases* of venereal exceeded 58 per cent. of the strength: at Hyderabad, it amounted to 39 per cent., and in the Mysore Division to 40 per cent., of the strength. Amongst the Native troops, as might be expected from the majority of the men having their families with them, the CASES of venereal amounted only to 3·063 per cent. of the strength; and the mortality per cent., at the different stations, ranged only

\* As mistakes are sometimes made by inexperienced arithmeticians, I may point out, that had this average mortality been struck from taking the average of the cumulated averages of the separate divisions, the mortality would be 4·252 per cent., instead of 3·856, and the loss of the Native troops 2·510 per cent., instead of 2·076 per cent.



amongst the second place of decimals. The disease next in frequency to venereal is dysentery, amounting amongst Europeans to 13·698 per cent. of strength, but amongst the Native troops to only 1·499 per cent. The mortality from dysentery ranged from 2·514 per cent. in the Hyderabad subsidiary force, 1·466 per cent. in the Malabar and Canara, and 1·002 per cent. in the Tenasserim provinces, to less than one half per cent. in the Southern Division. Amongst the Native troops, at no station did the mortality from dysentery amount to 1 in a 1,000 of the strength, except in China, where the mortality was 1·024 per cent. or 1 in 90; and in 1847 it was 0·787 per cent., but diarrhoea carried off 2·947 per cent., or 1 in about 34 men; and in 1847 the loss was 1·576 per cent. In the per centage number of cases amongst Europeans in India, diarrhoea follows dysentery 11 per cent., but natives are only subject to it in the ratio of 2·623 per cent., the deaths amount to little more than 1 in 500 among Europeans, and 1 in 607 natives. Rheumatism follows next in intensity, standing the fifth disease with Europeans, but second with the natives; the deaths with both, however, are only indicated by the second place of decimals per cent. The sixth disease in the per centage number of cases, but not in mortality as is generally supposed, is liver amongst the Europeans, the cases amounted to 7·319 per cent.; but the deaths at no one station to three-fourths per cent. of the strength,—at Hyderabad to 0·720 per cent., so that in its worst form there was not more than 1 death to 14 cases, or 1 death in 5 years amongst 139 men; and in the Southern Division the deaths from liver did not amount to more than 1 in 495 of the strength. At Hyderabad in 1847 the deaths from liver were 0·595 per cent.; but the average for all the Divisions for that year was only 1 death in every 282 men. With the Native troops, liver can scarcely be said to have a place; in five years amongst 363,726 men there were only 61 deaths, and the per centage of cases was only 0·146, and the deaths were *nil* at several stations. At the Presidency they amounted to only 0·034 per cent, and even in China did not exceed 0·038 per cent. of the strength, or 1 in 2,587 men. In the per centage number of CASES, diseases of the lungs stand seventh, and precede cholera amongst Europeans, but not so with natives. The Europeans had 2·114 per cent. of hospital cases of the lungs, or 1 in 48 men, but the deaths at only one station (the Northern Division) amounted to three-fourths per cent. (0·752); and at Nagpore they were as low as 1 in 1,798 of the strength (0·055), and for five years the deaths were only 1 in 564 men. Amongst the Native troops diseases of the lungs have almost as little influence as the liver complaint, amounting to 0·569 per cent. of cases in the 5 years, or 1 in 290 men; and the deaths at only one station exceeded 1 in 2,000 of the strength, and even at that station (the Centre Division) the deaths were only slightly more than 1 in 1,000 of the strength, the mean mortality for five years being 1 in 1,638 natives. China again shows its malign influence by 2 in 1,000 dying of thoracia. Cholera ranks as low as the eighth disease in the per centage of its *cases*, but in the per centage mortality to the number of cases treated, it stands first of all the diseases, although the loss is not high to the numbers exposed to its ravages. Amongst 59,218 Europeans there were 1,241 cases, or 1 in 48 men, and 609 deaths, or 1 in 97 men, so that the per centage of cases is 2·095, and the per centage of deaths 1·028; about one-half, therefore,

of those attacked died. In the Northern Division, in five years, there were only three cases, while in the Ceded Districts there were 378; the deaths ranged from one fourth per cent. in the Northern Division to 4.412, nearly  $4\frac{1}{2}$  per cent. in the Ceded Districts; and in the Centre and Southern Divisions, and at Aden, the deaths from cholera amounted to  $1\frac{1}{2}$  per cent. at each station. There were scarcely any cases of cholera at any of the stations of the army in the year 1847, and in eight divisions not a single death amongst Europeans; and yet it manifested its anomalous character by carrying off 19 Europeans out of 1866 in the Mysore Division, while it only killed 2 Natives out of 8313 of the strength in the same division. As a contrast to this, 25 Native soldiers were carried off at Aden in 1847, and not a single European. Similarly, in the Southern Division, 18 Natives died of cholera, and no European. The deaths from cholera in 1847 were 1 in 514 of strength of Europeans, and 1 in 869 of the Native soldiery. The per centage of cases of cholera for five years amongst the Native troops 2.623 per cent., or 2 in about 43 men, was rather greater than amongst the Europeans, but for the five years the per centage loss, 1.102, was somewhat less than that of Europeans; and the deaths at no station amounted to half the per centage of the deaths amongst Europeans in the Ceded Districts, while the Europeans lost 4.412 per cent., in the Ceded Districts, the Native troops (2405) lost only 1.612 per cent.; but, as a contrast to this, in the Southern Division the Native troops lost, in the five years, upon the total numbers, 2.240 per cent., and the Europeans lost only, in the same division, 1.414. The minimum loss to the Native troops was 0.144 per cent., at Aden, while the Europeans, at the same place, lost 1.418 per cent. The capricious action, therefore, of this extraordinary disease, defies all rational interpretation or explanation; and the intensity of the disease appears to have been double that of the preceding 20 years. The ninth disease in intensity, as far as relates to Europeans, is dropsy; but with the Native troops it precedes liver and thoracia, and stands, therefore, seventh. Amongst the 59,218 Europeans, there were only 177 cases; and the Natives, in 263,724 men, had 2,617 cases. The mortality which, amongst Europeans was only 1 in 1537 men, was amongst the Native troops 1 in 862 men.

From the above statements, it is shown that the intensity of the nine chief diseases, as indicated by the number of cases and the number of deaths, stands in a very different sequence amongst Europeans and Natives. Amongst Europeans and Natives the intensity, as indicated by CASES and DEATHS, stands in the following order:—

	Cases.		Deaths.	
	Europeans.	Natives.	Europeans.	Natives.
1	Fevers.	Fevers.	Cholera.	Cholera.
2	Venereal.	Rheumatism.	Dysentery.	Fevers.
3	Dysentery.	Venereal.	Fevers.	Diarrhœa.
4	Diarrhœa.	Diarrhœa.	Liver.	Dropsy.
5	Rheumatism.	Cholera.	Diarrhœa.	Dysentery.
6	Liver.	Dysentery.	Thoracia.	Rheumatism.
7	Thoracia.	Dropsy.	Dropsy.	Thoracia.
8	Cholera.	Thoracia.	Rheumatism.	Venereal.
9	Dropsy.	Liver.	Venereal.	Liver.



The only diseases, therefore, in which Europeans and Natives are equally sufferers, in numbers of CASES and DEATHS, are fevers and cholera; but though fevers stand at the head in number of cases, it is cholera that stands at the head in mortality. Liver, which is the sixth in the number of cases with Europeans, is the ninth in number of cases and mortality with the native troops; but though sixth in cases with Europeans, it stands fourth in mortality. Cholera with Europeans stands eighth in number of cases, but fifth with the Natives; and though it stands first in mortality with Europeans and Natives, a somewhat smaller proportion died of the natives attacked than of the Europeans. Dropsy stands fourth in deaths with Natives, but only seventh with Europeans. The order of the cases and deaths of the other diseases do not call for particular notice.

It remains to call attention to a table of experiments to determine the thermometric effect of the sun upon the soldier's head upon the line of march; to a table of the mortality amongst Europeans at different periods of their residence in India; and to extracts from interesting observations by some of the medical officers at the different stations.

The experiments to determine the heat to which the soldier's head is exposed on the line of march, were made at Nagpore.

The head gear of the different arms of the service was first exposed to the sun's rays without a white cover, subsequently with a white cover, and lastly with a wet rag inside the helmet, cap, &c., and the following were the results:—

NAGPORE SUBSIDIARY FORCE.

LVII.—*A series of Experiments, instituted at the request of Dr. Anderson, of the Artillery, to ascertain the advantage derived from the use of a White Cover worn in the Sun over the different Military Caps and Turbans, gave the following results:—*

In the shade, the use of the white cover reduced a thermometer, placed under the cap, two degrees.

In the sun, after half-an-hour's exposure—

	Without a White Cover.	With a White Cover.
	Thermometer.	Fahrenheit Thermometer.
Horse Artillery Helmet .....	117°	....
Foot Artillery Dress Cap .....	122°	....
Peaked Kilmarnock Bonnet .....	119°	113°
Sepoy's Glazed Turban .....	130°	111°
Experiment with a wet rag inside head gear:		
Horse Artillery Helmet .....	102°	....
Foot Artillery Dress Cap .....	114°	....
Peaked Kilmarnock Bonnet .....	108°	99°
Sepoy's Glazed Turban .....	106°	102°

The head in the helmet, therefore, with a wet rag inside corresponding to the natural perspiration, was exposed to 15° less heat, by the evaporation of the moisture than without this cooling process. The

heat under the Kilmarnock bonnet was reduced by the white cover which reflects the sun's rays off from a white surface, from  $119^{\circ}$  to  $113^{\circ}$ , but the evaporation from the wet rag inside reduced the heat to  $99^{\circ}$ , the temperature being thus lowered  $20^{\circ}$ . But the poor sepoy, with his glazed turban, appeared to be the greatest gainer; the heat of his head,  $130^{\circ}$ , without a white cover, being reduced by a white cover to  $111^{\circ}$ , and  $102^{\circ}$  by means of a wet rag within the white-covered turban. The practical application of two simple scientific principles, that of a white surface reflecting the sun's rays, and of evaporation reducing temperature, are here shown to be of considerable importance to the soldier.

The second subject to which attention is called is the value of life at different periods of residence in India. The table relating to the Europeans, under the Madras Government, is for a limited number only, and for a single year, and will necessarily not express normal conditions; but there are some features of interest in it; and I am enabled to add from a Bengal medical report a similar table for 16,180 Europeans for the years 1847-8:—

LVIII.—*Effect of Age and Length of Service in India upon the European Troops, for 1847.*

Period of Residence in India.	Strength.	Admissions.	Deaths.	Per Cent. of Admissions to Strength.	Per Cent. of Deaths to Strength.	Per Cent. of Deaths to Admissions.
Under 1 year ....	774	851	33	109.948	4.263	3.877
1 to 3 years....	339	840	4	247.787	1.180	0.476
3 to 5 „ ...	455	746	6	163.956	1.318	0.804
5 to 7 „ ...	768	1,195	18	155.598	2.343	1.506
7 to 10 „ ...	1,030	1,224	13	118.834	1.262	1.062
10 to 14 „ ...	393	667	12	167.175	3.053	1.799
14 to 20 and upwards.....}	933	889	35	95.284	3.751	3.937
Total ....	4,692	6,413	121	136.658	2.578	1.887

LIX.—*Sickness and Mortality amongst European Troops in Bengal in regard to Length of Residence for 1847-8.*

Period of Residence in India.	Strength of each Class.	Admissions of each Class.	Deaths of each Class.	
Under 1 year .....	2,273	2,013	133	5.85
1 to 3 years .....	3,509	8,359	217	6.15
3 to 5 „ .....	4,380	6,766	198	4.52
5 to 7 „ .....	2,880	4,410	122	4.23
7 to 10 „ .....	1,746	2,720	81	4.64
10 to 14 „ .....	678	1,516	25	3.69
14 to 20 „ .....	655	1,006	23	3.57
Above 20 years .....	49	78	1	2.1
Born in India .....	10	11	1	1.0
Total.....	16,180	26,879	801	4.95



No exertion appears to be spared at Madras to withdraw the European troops from habits of intemperance, by canteen regulations, by encouraging temperance societies in regiments, by supplying malt liquor to the men so cheap that they may prefer it to spirits, and also by affording them physical and intellectual amusements. Nevertheless, the reports from almost all the medical officers concur in stating, that "the chief cause of crime and mortality is drunkenness." If such be the opinions at Madras, where the mortality is *comparatively* small, they have added weight in Bengal, where a medical officer, in his report for 1847, uses the following language: "The prisoners brought to trial (Europeans) during the year, and convicted, were 294, of whom 3 were transported as felons, 16 subjected to corporal punishment, and the rest to various periods of imprisonment; and this dark catalogue had in almost every instance its origin more or less remote in drunkenness." The medical officer, freely admitting this, nevertheless states, "that the difficulty of devising a remedy for its removal appears almost insurmountable." And another Bengal medical officer reports that, at a station, from 1840 to 1848, only 33 men died from fever, but 41 died of *delirium tremens*; and there were 2375 cases of drunkenness in a strength of 3451 men. Even in temperate regiments (so called) the consumption of spirits and beer among the Madras troops is startling. For instance, the following is a return of the liquors sold in the canteen of a regiment from the 1st January to the 31st December, 1847:—

Arrack.		Brandy.	Gin.	Beer.	Porter.
Gallons.*	Drams.	Bottles.	Bottles.	Bottles.	Bottles.
7,679	2	802	270	5,613	2,514

\* There are 40 drams to a gallon.

So that 307,160 drams of arrack were consumed in the canteen, and 9,199 bottles of brandy, gin, beer, and porter. This was the quantity legitimately obtained in the canteen; and how much more may have been illegitimately obtained elsewhere it is impossible to say. The average strength of the regiment was 892, and it had a teatotal society of 153 members, and a temperance society of 80 members. In a regiment at Hyderabad there were 84 temperance men, and 845 spirit drinkers; and the annual consumption per man, in the canteen, was 277 drams. In the artillery, at the same place, there were 24 temperance men, and 104 spirit drinkers, who consumed 401 drams each per annum, independently of 972 bottles of beer and porter each yearly; while the European regiment only consumed 14 bottles of beer per man annually.

The medical officers generally bear testimony to the sanitary advantages, amongst well-organized bodies of Europeans, resulting from the men being provided with intellectual as well as physical amusements. In the artillery, at the mount near to Madras, each company has its library; but the Roman Catholic priest objected to members of his church belonging to them. The amusements are rackets, football,

skittles, long bullets, and chess and backgammon in the canteen and temperance rooms; such arrangements exist in all properly organized regiments. Of the 1st Madras Fusiliers it is said that the 1st January, 1848, was their hundredth anniversary, as they were embodied in 1748, from independent companies. There was a teatotal and temperance society in the regiment, and with an average strength of 892 in 1847 they lost only 6 men. Crime was comparatively rare, and the men were respectful and well conducted. In a troop of horse artillery at Jaulna, consisting of 102 Europeans, the medical officer reported that the internal economy was so good that intemperance was rare, and other crimes so few "*that not a case has required to be brought before a court martial for the last three years.*" This is almost marvellous, —102 common European soldiers without a court martial punishment amongst them for three years! In the Southern Division there was only 1 death in 1837 in a company of artillery of 53 men; and in a European regiment in the same division, 945 strong, there were only 12 deaths, at the rate of 1·27 per cent., an absence of mortality not equalled by a regiment in Europe. The medical officers attach much importance to the men being induced to drink malt liquor, by its abundance and cheapness, rather than spirits; and their sentiments appear to be embodied in the following extract from one of their reports: "The measure still adopted by the Government of supplying the canteen with porter in casks, direct from England, *continues to prove highly beneficial and conducive to the maintenance of good health among the Europeans.*" The facts and opinions in the preceding extracts are so entirely in conformity with my own observations and experience, that I venture to repeat a few words, with which I closed my analysis of the vital statistics of the armies of India, addressed to the Statistical Society early in 1847:—

"I have a strong conviction that much of European disease in India is traceable to over stimulus, and that mortality amongst the European troops will not be lessened until the European soldier is improved in his habits; until he is made to understand that temperance is for the benefit of his body, libraries for the benefit of his mind, exercise for the benefit of his health, and savings' banks for the benefit of his purse."

The final results of the comparisons between the average sickness and mortality, from 1842 to 1846, inclusive, and 1847, are shown in the following tables:—

LX.—EUROPEANS.

Years.	Per Centage of Treated to Strength.	Deaths to Strength.	Deaths to Sick Treated.
1842.....	161·341	4·205	2·606
1843.....	174·300	4·905	2·814
1844.....	147·744	2·810	1·902
1845.....	162·543	3·912	2·407
1846.....	149·743	3·617	2·415



## LXI.—NATIVES.

Years.	Per Centage of Treated to Strength.	Deaths to Strength.	Deaths to Sick Treated.
1842.....	74·218	2·528	3·407
1843.....	67·405	2·371	3·517
1844.....	69·273	1·994	2·879
1845.....	66·616	2·062	3·096
1846.....	76·657	2·680	3·497

The average for the five years gives the following per centage from all diseases:—

## EUROPEANS.

Per centage of Treated to Strength .....	159·215
Ditto of Deaths to do. ....	3·856
Ditto of do. to Treated .....	2·439

## NATIVES.

Per centage of Treated to Strength .....	70·846
Ditto of Deaths to do. ....	2·076
Ditto of do. to Treated .....	3·287

The experience in 1847 gives the following results:—

## EUROPEANS.

Per centage of Treated to Strength .....	156·575
Ditto of Deaths to do. ....	2·948
Ditto of do. to Treated .....	1·883

## NATIVES.

Per centage of Treated to Strength .....	77·611
Ditto of Deaths to do. ....	1·295
Ditto of do. to Treated .....	1·668

From which it will be observed that although disease has been pretty nearly equally frequent, yet it is very satisfactory to notice a marked decrease, in point of severity, by nearly one per cent. less mortality, both as to the strength and number stated amongst both bodies of men in 1847. The mean mortality amongst the *Company's* European soldiers, from 1825 to 1844, inclusive, being 3·846 per cent., and the results of the five years under review, being 3·856 per cent., the close approximation would seem to testify that these figures are indications of normal conditions.

The following per centage mortality amongst Europeans, under the different governments in India, does not come within the period to which the preceding tables refer, nor is it from Madras, but its insertion will extend the range of comparisons.

*Mortality amongst European Troops in India.*

Years.	Bengal.	Madras.	Bombay.
1845.....	6.21	3.62	8.3
1846.....	5.04	3.64	9.32
1847.....	4.49	3.08	3.01
1848.....	5.25	1.64	2.51
1849.....	7.13	2.24	4.6

It would hence appear that there is a slight diminution in the mortality in Bengal; but there had also been similar fluctuating diminutions in the preceding 20 years. The fluctuations in Bombay, from 9.32 per cent. to 3.01 and 2.51 per cent., are remarkable; the more so when compared with the comparatively steady mortality in the Madras European troops.

In conclusion, I may add that statements of the nature of the preceding, founded as they are upon the most minute and elaborate official details, have important bearings. To the medical man, they afford the means of comparing the intensity of the same disease under different local circumstances, of investigating the history and character of diseases, and of applying remedial or ameliorating measures where practicable. The physiologist views with a curious and inquiring eye the influence of those physical, social, or moral causes which occasion the development of *latent* diseases under certain conditions; or the exacerbation of those that are patent under other conditions; not less does he contemplate and consider the prodigious discrepancies in the value of life of beings with the same organization, and living under the same climatorial conditions, but of different geographical origin and habits. The actuary finds data for regulating his estimation of the value of life, and of fixing his premiums accordingly. The statesman, the economist, and the philanthropist have their interest also in such statements. The first in relation to securing his political objects in the most efficient manner, by the smallest agency; the second desiderates a system to secure the state from a wasteful expenditure of its pecuniary resources, by a wasteful expenditure of European life in India, for it is understood that each European costs 100*l.* by the time he joins his regiment, and the 10,025 lives lost from 1845 to 1849 in all India, occasioned a loss, therefore, of above a million of money; and finally, the philanthropist is shocked by the conviction that much of the waste of European life in India is self-imposed, and that much of the intensity of the mortality might be within human control.

While the preceding tables were under press, the following statements appeared in the "Madras Government Gazette," for March last. They embrace a larger number of troops than are found in the Medical Reports of 1842 to 1847. They are not verified by any official signature; but I think it desirable to annex them for the sake of future analyses:—



Army during Seven Years, from 1842 to 1848 inclusive; showing also the Total Number of Admissions and Deaths during the same period, the Per Centage of Sick Treated to Strength, Deaths to Strength, and Deaths to Sick Treated.

Years.	Strength.	Cholera.		Fevers.		Liver.		Diarrhoea.		Dysentery.		Thoracic Disease.		Rheumatism.		Venereal Disease.		Dropsy.		Total from preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
1842.....	12,080	335	163	2,137	26	991	34	1,683	37	1,912	121	194	20	1,171	7	2,414	5	43	8	11,880	421	19,490	508
1843.....	12,436	448	206	4,031	50	911	36	1,663	37	2,008	158	381	27	1,171	9	2,188	7	49	11	12,850	537	21,676	610
1844.....	13,057	111	54	3,431	53	811	23	1,333	20	1,360	89	387	21	1,248	9	2,099	3	85	7	10,815	275	19,291	367
1845.....	12,548	232	124	3,971	52	930	50	1,447	27	1,625	102	179	21	1,048	9	2,470	7	31	8	11,933	400	20,396	491
1846.....	11,113	146	75	2,866	36	827	40	949	17	1,439	98	147	16	883	10	2,332	8	30	8	9,718	308	16,641	402
1847.....	11,429	32	22	2,710	30	740	41	1,292	14	1,346	116	236	28	1,047	4	3,401	4	30	1	10,834	260	17,895	337
1848.....	9,679½	3	2	2,677	23	701	13	822	9	841	50	1,288	25	1,064	5	3,484	5	30	9	10,910	141	17,290	174
Total .....	82,342½	1,307	646	22,923	270	5,911	237	9,189	161	10,531	734	2,812	158	7,631	45	18,368	39	248	52	78,940	2,342	132,679	2,859
Percentage of Treated to Strength .....		1.587		27.838		7.178		11.159		12.790		3.415		9.390		22.331		0.301		91.010		161.131	
Do. of Deaths to do. ....		0.784		0.327		0.287		0.196		0.903		0.193		0.054		0.047		0.063		2.844		3.508	
Do. do. to Treated .....		49.426		1.177		4.009		1.752		6.969		5.618		0.559		0.212		20.967		2.967		2.177	

TABLE Exhibiting Information on the same points for the Year 1849.

Years.	Strength.	Cholera.		Fevers.		Liver.		Diarrhoea.		Dysentery.		Thoracic Disease.		Rheumatism.		Venereal Disease.		Dropsy.		Total from preceding Diseases.		Grand Total of all Diseases.	
		Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
1849.....	9,559	43	26	2,807	12	625	32	884	19	905	72	967	34	967	2	3,901	5	22	2	10,311	204	15,589	245
Per centage of Treated to Strength .....		0.449		29.364		6.538		9.247		9.467		10.116		10.116		40.809		0.230		107.861		163.081	
Do. of Deaths to do. ....		0.271		0.125		0.334		0.198		0.753		0.355		0.020		0.052		0.020		2.134		2.563	
Do. do. to Treated .....		60.465		0.427		5.120		2.149		7.955		3.516		0.206		0.128		9.090		1.973		1.571	

TABLE Exhibiting the Number of Admissions and Deaths from the most important Diseases amongst the Native Troops of the Madras Army during Seven Years, from 1842 to 1848 inclusive; showing also the Total Number of Admissions and Deaths during the same period, the Per Centage of Sick Treated to Strength, Deaths to Strength, and Deaths to Sick Treated.

Years.	Strength.	Cholera.	Fevers.	Liver.	Diarrhoea.	Dysentery.	Thoracic Diseases.	Rheumatism.	Venereal Diseases.	Dropsy.	Total from preceding Diseases.	Grand Total of all Diseases.
		Treated. Died.	Treated. Died.	Treated. Died.	Treated. Died.	Treated. Died.	Treated. Died.	Treated. Died.	Treated. Died.	Treated. Died.	Treated. Died.	Treated. Died.
1842.....	74,618	1,786	19,401	108	3,180	947	392	5,140	2,467	373	33,794	55,380
1843.....	73,763	2,166	14,888	92	1,692	846	472	4,976	2,403	446	27,981	49,720
1844.....	73,083	1,181	17,584	113	1,652	1,046	461	5,189	2,178	694	30,098	50,627
1845.....	74,861	1,718	17,824	112	1,596	1,087	386	4,921	2,023	703	30,370	49,870
1846.....	74,682	1,208	23,303	116	1,726	979	430	4,944	2,299	504	37,000	57,249
1847.....	67,950	234	22,928	93	1,226	974	336	4,690	2,547	773	33,801	52,737
1848.....	55,946	237	22,336	76	1,030	742	895	4,451	1,968	523	32,258	48,248
Total .....	494,903	10,021	138,264	710	12,102	6,621	3,372	34,311	15,885	4,016	225,302	363,831
Per centage of Treated to Strength .....		2.024	27.937	0.143	2.445	1.337	0.681	6.932	3.209	0.811	45.524	73.515
Do. of Deaths to do. ...		0.859	0.305	0.017	0.142	0.093	0.067	0.074	0.020	0.123	1.703	2.063
Do. do. to Treated		42.430	1.094	11.917	5.842	6.962	9.905	1.069	0.635	15.214	3.742	2.806

TABLE Exhibiting Information on the same points for the Year 1849.

Years.	Strength.	Cholera.	Fevers.	Liver.	Diarrhoea.	Dysentery.	Thoracic Diseases.	Rheumatism.	Venereal Diseases.	Dropsy.	Total from preceding Diseases.	Grand Total of all Diseases.
		Treated. Died.	Treated. Died.	Treated. Died.	Treated. Died.	Treated. Died.	Treated. Died.	Treated. Died.	Treated. Died.	Treated. Died.	Treated. Died.	Treated. Died.
1849.....	50,030	269	18,588	86	1,159	631	911	3,929	1,984	520	28,077	43,785
Per centage of Treated to Strength .....		0.537	37.153	0.171	2.316	1.261	1.820	7.853	3.965	1.039	56.120	87.517
Do. of Deaths to do. ...		0.207	0.265	0.011	0.057	0.053	0.121	0.951	0.015	0.123	0.911	1.219
Do. do. to Treated		38.661	0.716	6.976	2.502	4.278	6.695	0.661	0.403	11.923	1.624	1.393



TABLES Showing the Influence of Intemperance on Sickness and Mortality and Crime amongst the European Troops under the Madras Presidency, during the Year 1849.

TABLE I.

Showing the Sickness and Mortality amongst Various Classes of Men.

Classes .....	Teatotallers.				Temperate.			
Strength.....	450.				4,318.			
Diseases.	Admit- ted.	Died.	Ratio of Admission to Strength per Cent.	Ratio of Deaths to Strength per Cent.	Admit- ted.	Died.	Ratio of Admission to Strength per Cent.	Ratio of Deaths to Strength per Cent.
Fevers .....	141	1	31·333	0·222	768	1	17·786	0·023
Cholera .....	....	....	....	....	17	13	0·393	0·301
Dysentery, Acute and } Chronic .....	52	3	11·555	0·666	344	31	7·966	0·717
Diarrhoea .....	50	1	11·111	0·222	348	4	8·059	0·092
Other Diseases, Sto- } mach and Bowels....	23	....	5·111	....	337	6	7·804	0·138
Hepatitis, Acute and } Chronic .....	26	....	5·777	....	249	16	5·766	0·370
Disease of the Lungs...	43	....	9·555	....	478	17	11·069	0·393
Ditto Brain.....	14	....	3·111	....	108	1	2·501	0·023
Rheumatic Affections	27	....	6·000	....	487	....	11·278	....
Venereal ditto.....	94	....	20·888	....	1,514	1	35·062	0·023
Dropsies .....	....	....	....	....	2	....	0·046	....
All other Diseases.....	119	....	26,444	....	1,462	10	33·858	0·231
Total.....	589	5	130·888	1·111	6,114	100	141·593	2·315

Classes .....	Intemperate.				Total.			
Strength.....	942.				5,710.			
Fevers .....	190	2	20·169	0·212	1,099	4	19·246	0·070
Cholera .....	7	6	0·743	0·636	24	19	0·420	0·332
Dysentery, Acute and } Chronic .....	112	15	11·889	1·592	508	49	8·896	0·858
Diarrhoea .....	108	....	11·464	....	506	5	8·861	0·087
Other Diseases, Sto- } mach and Bowels....	112	2	11·889	0·212	472	8	8·266	0·140
Hepatitis, Acute and } Chronic .....	96	2	10·191	0·212	371	18	6·497	0·315
Disease of the Lungs...	113	4	11·995	0·424	634	21	11·103	0·367
Ditto Brain.....	82	5	8·704	0·530	204	6	3·572	0·105
Rheumatic Affections	143	1	15·180	0·106	657	1	11·506	0·017
Venereal ditto.....	477	....	50·636	....	2,085	1	36·514	0·017
Dropsies .....	1	....	0·106	....	3	....	0·052	....
All other Diseases.....	583	5	61·889	0·530	2,164	15	37·898	0·262
Total.....	2,024	42	214·861	4·458	8,727	147	152,837	2·574

The above return includes the 15th Hussars, H. M.'s 25th, 51st, 84th, and 94th Regiments, and the 1st Madras Fusiliers.

TABLE II.—*Return showing the Comparative Ratio of Punishments, &c., awarded to the following Classes of Men.*

Class .....		Teatotallers.							
Corps .....	Artillery Corps.	H. M.'s 15th.	H. M.'s 25th.	H. M.'s 51st.	H. M.'s 84th.	H. M.'s 94th.	1st Madras Fusiliers.	2nd European L. I.	Total.
Strength .....	145	10	54	...	249	99	38	76	671
Punished by {	Regimental Captains...	10	...	17	...	27	16	8	99
	Commanding Officers	2	...	...	...	38	2	7	57
	Regtl. Courts Martial...	...	...	...	...	2	1	...	3
Tried by {	District ditto .....	...	...	...	...	...	...	...	...
	General ditto .....	...	...	...	...	...	...	...	...
Total.....	12	...	17	...	67	19	15	29	159
Ratio per Cent. to Strength...	8·275	...	31·481	...	26·907	19·191	39·473	38·157	23·695

Class .....		Temperate.							
Strength .....	1,468	603	574	886	677	723	855	825	6,611
Punished by {	Regimental Captains...	600	92	103	181	181	134	114	1,653
	Commanding Officers	167	124	356	134	359	160	321	2,086
	Regtl. Courts Martial...	19	2	18	6	5	10	9	82
Tried by {	District ditto .....	15	2	10	5	1	...	7	51
	General ditto .....	3	...	2	...	1	...	4	10
Total.....	804	220	489	326	497	304	451	791	3,882
Ratio per Cent. to Strength...	54·768	36·484	85·191	36·794	73·412	42·047	52·748	95·878	58·720

Class .....		Intemperate.							
Strength .....	345	45	88	203	136	315	155	174	1,461
Punished by {	Regimental Captains...	254	11	...	87	40	98	22	724
	Commanding Officers	285	38	139	105	136	249	106	1,485
	Regtl. Courts Martial...	72	5	3	9	8	42	9	204
Tried by {	District ditto .....	47	2	5	2	1	2	9	72
	General ditto .....	6	...	...	...	1	...	2	13
Total.....	664	56	147	203	186	391	148	703	2,498
Ratio per Cent. to Strength...	192·463	124·444	167·045	100·000	136·764	124·126	95·483	404·022	170·978

		Ratio per Cent. to Strength.		
		Teatotallers.	Temperate.	Intemperate.
Punished by .....	{ Regimental Captains .....	14·754	25·003	49·555
	{ Commanding Officers .....	8·494	31·553	101·642
	{ Regimental Courts Martial.....	0·447	1·240	13·963
Tried by.....	{ District ditto .....	...	0·771	4·928
	{ General ditto .....	...	0·151	0·889
Total.....		23·695	58·720	170·978

The returns of the year 1842 to 1846 inclusive, continued in the above tables, strengthen the improved view of the health of the European troops; the former average gave 3·856 per cent. of deaths, and the latter 3·508 per cent.; the average of the Native mortality continuing singularly stationary, viz., 2·076 and 2·063 per cent. The Temperance and Punishment Tables should be in the hands of every European soldier, to impress upon him the salutary lesson, that where 1 teatotaler is cut off, 4 intemperate men lose their lives; and in regimental courts martial, where not 1 teatotal soldier in 200 is subjected to punishment, 28 intemperate men are punished; and before district and general courts martial the teatotaler does not appear at all.



*An Attempt to Ascertain the Magnitude and Fluctuations of the Amount of BILLS OF EXCHANGE (Inland and Foreign) in Circulation at one time in Great Britain, in England, in Scotland, in Lancashire, and in Cheshire, respectively, during each of the Twenty Years 1828-1847, both inclusive; and also embracing in the inquiry BILLS drawn upon Foreign Countries. By WILLIAM NEWMARCH, Esq.*

[Read before the Statistical Society of London, 22nd April and 20th May, 1850.]

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I.—Introduction.

OF the four principal forms of currency to which in this country we are accustomed, namely—

- (1) Bank of England notes,
- (2) Country Bank notes,
- (3) Metallic money, and
- (4) Bills of Exchange,

we are able to trace the fluctuations and to ascertain the amount of the first *two* with great precision; of the *third* with some approximation to certainty; and it is only as regards the *last* (bills of exchange) that we are not in possession of any extensive and accurate collection of data.

From a consideration of this fact the present inquiry has derived its origin.

The object of the investigation on which I am about to enter has been to arrive at some knowledge of the statistics of *Bills of Exchange*, to collect together such facts and to institute such calculations as may enable us to speak with some degree of confidence of the *amount*, the *fluctuations*, and the *progress*, of this large and most important part of the negotiable paper circulating in this country; and to embrace within

the period of investigation a series of years which have been distinguished by the occurrence of several different phases of national and commercial prosperity.

I beg to observe, at the outset, that the present contribution is not to be regarded in any sense as a controversial tract on the question of the currency. I have nothing whatever to do in this place with the writings of the distinguished persons who have discussed that question, except to borrow from them whatever assistance they can render towards a kindred but perfectly neutral topic. It may possibly happen that the facts I have to state may be of some value in future discussions of the kind referred to—I hope they may. But my present business is not to anticipate the application of these facts, but to exhibit them in such a form and in such an order as will give them, if possible, the advantage of the greatest lucidity, combined with the greatest conciseness.

I propose to divide the inquiry into two principal sections.

In the *First Section*, I will endeavour to state, (1) what a bill of exchange is understood to imply in the course of this inquiry; (2) to point out some of the rules of classification, and to indicate some of the peculiar causes which regulate the influence and the distribution of different portions of the bill circulation; and (3) to exhibit in a consecutive and statistical form the amount and fluctuations of that currency during the several years embraced in this investigation; and also during the *periods*, and with reference to the *groups* into which, for reasons to be presently stated, those years, and the gross volume of the bill currency, have been distinguished.

In the *Second Section*, I will endeavour to extend and illustrate the materials contained in the first section, by bringing them into comparison with other statistical facts bearing an intimate relation, either as causes or effects, to the volume and vicissitudes of the currency of bills of exchange.

## II.—*Definitions; Bases and Elements of Calculation; Mode of Procedure.*

Throughout the whole of this inquiry, I shall adhere to the received and established phraseology of merchants with reference to bills of exchange.

The scope of this investigation does *not* extend to *Ireland*. It embraces the whole of Great Britain. By an *inland* bill of exchange, therefore, I understand a bill drawn within the limits of *Great Britain*, and of course not entitled to circulate as a legal instrument unless bearing the stamp duty imposed by the present Stamp Act, passed in 1815 (55 Geo. III., cap. 184).

By a *foreign* bill of exchange, I understand a bill drawn upon *Great Britain* from some place *out* of the *United Kingdom*. I am aware of a technical practice, according to which bills drawn in Scotland and Ireland are held, in point of law, to be *foreign* bills. That practice, however, it will be convenient to disregard for our present purpose. Now, as the stamp duty on a bill of exchange is imposed only in the country or place where it is drawn, it is clear that, with reference to the whole mass of foreign bills drawn *upon* Great Britain, the returns of our Board of Inland Revenue can afford no assistance whatever; and as we proceed with our task, we shall see that one of the



difficulties least readily surmounted is precisely that which concerns the correct method of ascertaining the volume of the *foreign* bill currency.

The whole mass of bills of exchange constantly in circulation in Great Britain is composed of two unequal parts. The first, and by far the largest part, consists of bills *drawn and accepted* within the limits of Great Britain, and, as I have just said, therefore, of *inland bills*, valid only when impressed with a stamp duty. The other, and smaller part, consists of bills drawn *out* of the *United Kingdom*, but accepted, or made payable, within *Great Britain*, most commonly within the City of London, and not bearing any stamp duty which the records of any English office of revenue will enable us to estimate. These are *foreign bills*; and it will prevent a good deal of ambiguity if the exact meaning of these two terms of *Inland and Foreign bills*, as here defined, is kept very closely in view.

Now there is every reason to believe that scarcely any tax in this country suffers from so few evasions as the stamp duty on bills of exchange. It may not be the direct interest of the drawer in all cases that the instrument shall be written upon paper impressed with the full and accurate amount of duty; but there are at least three other parties interested in the transaction, to whom it is of the utmost possible moment that the requirements of the law shall be fulfilled. These parties are the acceptor, the endorers, and the payee; and it is pretty certain that the vigilance of parties concerned in these capacities does most effectually secure a full compliance with the Act of Parliament. It is satisfactory, therefore, at the outset, to know, that if the accounts furnished by the Stamp Office do actually contain the precise kind of information required, we have in those accounts a faithful outline of the extent and fluctuations of the currency of *inland* bills of exchange.

It becomes important, then, to ascertain what is the kind of information to be obtained from the Stamp Office; and we shall find that the form of return, to be of any practical use, will be somewhat elaborate.

The scale of duties is adjusted under the guidance of a twofold principle; first, the amount of duty has reference to the *amount* of the bill; and, secondly, it has reference to the *usance* of the bill. For example, a bill for 20*l.*, at two months' date, pays a tax of 2*s.*; and a bill for 50*l.*, at the same usance, pays a tax of 3*s.* 6*d.*; but, on the other hand, if the bill for 20*l.* be drawn at three months, instead of two, it pays 2*s.* 6*d.*, instead of 2*s.*; and, in like manner, a similar extension of the usance of the bill for 50*l.* raises the stamp upon it from 3*s.* 6*d.* to 4*s.* 6*d.* The most important feature of the scale, however, is, *that the duty increases mainly with the amount of the bill.*

It will be obvious, from this statement, that nothing beyond a very vague notion of the bill currency can be gathered from any Stamp Office return, which merely states the amount of revenue derived from the duty on bills of exchange *in one sum*, and which does not at least particularize the amount of revenue received under each of the thirteen rates of duty. It is also important that separate returns should be given for different districts of the country.

Supposing that such a return was actually rendered for any particular year, say for 1848, let us see what it would enable us to ascertain. We find from the schedule of rates, that a 3*s.* 6*d.* stamp, for instance, will cover a bill of from 50*l.* to 100*l.*, at *two months' date*,

and of from 30*l.* to 50*l.*, at *three months' date*; and suppose that the return informs us that, in 1848, as many as 10,000 stamps, of 3*s.* 6*d.* each, were sold in Great Britain, it is quite plain that, even with the aid of these important facts, we cannot arrive at any very precise conclusion as to the actual total amount of inland bills of exchange created by the sale of these 10,000 three-and-sixpenny stamps; and still less can we ascertain with any approach to certainty what was the average amount of such bills in circulation *at one time* during the year 1848. We cannot arrive at these results, because, in the first place, the legal range of the stamp is a very wide one, namely, from 30*l.* to 100*l.*; and, in the next place, we have no means of knowing how many of the bills were drawn at *less* than two months' date, and how many *beyond* it.

How, then, can the mere elements of the calculation rendered by the Stamp Office be turned to profitable account? Obviously, only by one method, and that method must consist in ascertaining, from a careful and systematic examination of a large number of real and *bond fide* bills of exchange drawn upon 3*s.* 6*d.* stamps, two facts, namely, (1) the average *amount* of each bill, and (2) the average *usance* of each bill.

If we suppose that these two additional facts have been established, the formula will then be complete, and it will assume a very simple shape, thus—Given that in 1848, there were sold, say, 10,000 stamps, at 3*s.* 6*d.* each, upon each of which a bill for, say, 46*l.* was drawn, at an average *usance* of, say, three months, what was the *total* and *average* circulation of such bills in that year?

*Now, in a few words, the main object of this paper is to describe the methods I have pursued for ascertaining by actual observation those elements of the calculation by the aid of which alone the official accounts can be rendered of practical use.*

The following is the schedule of stamp duties imposed by 55 Geo. III., cap. 184, divided into Three Groups. With reference to these groups, I shall presently have something more to say.

TABLE I.

*Rates of Duty on Inland Bills of Exchange imposed by 55 Geo. III., cap. 184, (1815) and at present in force in Great Britain.*

Stamps in Groups.		Two Months' Usance.		Above Two Months' Usance.	
		From	To	From	To
		£	£	£	£
I.	1 <i>s.</i> .....	2	5	....	....
	1 <i>s.</i> 6 <i>d.</i> .....	5	20	2	5
	2 <i>s.</i> .....	20	30	5	20
	2 <i>s.</i> 6 <i>d.</i> .....	30	50	20	30
II.	3 <i>s.</i> 6 <i>d.</i> .....	50	100	30	50
	4 <i>s.</i> 6 <i>d.</i> .....	100	200	50	100
	5 <i>s.</i> .....	200	300	100	200
	6 <i>s.</i> .....	300	500	200	300
III.	8 <i>s.</i> 6 <i>d.</i> .....	500	1,000	300	500
	12 <i>s.</i> 6 <i>d.</i> .....	1,000	2,000	500	1,000
	15 <i>s.</i> .....	2,000	3,000	1,000	2,000
	25 <i>s.</i> .....	3,000	above	2,000	3,000
	30 <i>s.</i> .....	....	....	3,000	above



III.—*Data employed in the present inquiry; Returns furnished by certain of the London Bankers and Bill-Brokers; Tabular Analysis of these Returns; Importance of the results obtained from them.*

Concerned practically, as I am, in the daily administration of a bank, I have been desirous for some time to ascertain with an approach to accuracy the extent and fluctuations of the currency of bills of exchange. I have once or twice endeavoured to obtain, through various channels, such a return from the Stamp Office as would effectually serve as the basis of an extensive inquiry; but, from one cause or another, I never had the good fortune to succeed. The publication, however, of the Appendix to the Report of the Committee of the House of Commons on Commercial Distress, appointed with reference to the financial crisis of 1847, in a great measure put me in possession of the data I had so long endeavoured to obtain. The Appendices Nos. 27 and 29 to that Report contain a detailed account of the revenue obtained from stamp duties on bills of exchange in *Great Britain, Lancashire, and Cheshire*, during the period from 1st January, 1830, to October, 1847. And combining this document with a Return contained in the Appendix No. 5 to the Commons' Report on Joint Stock Banks of 1837 (15th July, 1837, No. 531), a complete account is obtained of the sale of bill stamps in *Great Britain* for a period of twenty years, that is to say, from 1st January, 1828, to 31st December, 1847. I must mention, however, that I am indebted to the courtesy of Mr. Porter, the Secretary of the Board of Trade, for the figures required to complete the Return on the Commercial Distress Report, from October to December, 1847; for at the time when the calculations of which I am about to submit the results were undertaken, in the spring and summer of 1849, the Tables of Revenue, &c., for 1847, had not been published. I shall have occasion, further on, to give several specific references to the authorities upon which I have depended for my official facts; but these are the immediate circumstances which led to the preparation of the present paper.

Furnished with materials so complete from the Stamp Office, as to the *number* of bill stamps sold, and the *districts* in which they had been distributed, I became very soon convinced that the only satisfactory method of ascertaining the two remaining elements of the calculation, namely, (1) the average amount of the bills drawn upon each kind of stamp, and (2) the average usance of each of these descriptions of bills, was to obtain an extensive series of observations as to these two particulars, by the actual examination of a mass of *bonâ fide* bills of exchange in circulation, and so selected as to present a fair sample of the bill currency of the country. This could only be done by the assistance of some of the City bankers, having an extensive business, in which bills of exchange to a large amount pass through their hands. Through the kindness of Mr. Tooke, I was introduced to five very eminent firms in the City, distinguished for the extent of their business as bankers and as bill-brokers; and by the support and countenance which he gave to the request I ventured to make to each of these houses, I was furnished by them with certain statistical returns, containing the results of a careful examination of a portion of the bills in their respective bill cases. Without the facts which these returns

enabled me to ascertain, it would have been quite futile to have prosecuted the inquiry with any prospect of success; and I feel, therefore, that I am under the greatest obligation to the distinguished parties in question for the essential assistance they were good enough to render with so much courtesy and promptness.

The total number of bills of exchange (inland and foreign) included in the accounts rendered by these five houses, is as many as 4,367 bills, drawn for a total sum of 1,216,974*l*.

The details of the information obtained from the respective firms I have considered throughout to be strictly confidential, but it will be quite easy to describe the method of observation and the general results without any undue revelation of particular and confidential statements.

The following table is the copy of part of two pages of one of the banker's returns:—

TABLE II.

*Bills, Inland, drawn on 3s. 6d. Stamps and at the following Dates, viz.:—*

	One Month.	Two Months.	Three Months.	Four Months.	Five Months.	Six Months.	
	£	£	£	£	£	£	
....	34	48	49	....	....	....	
....	40	45	43	....	....	....	
....	70	35	46	....	....	....	
....	96	35	43	....	....	....	
....	61	50	48	....	....	....	
....	53	47	48	....	....	....	
&c.	&c.	&c.	&c.	&c.	&c.	&c.	
Total .....	200	1,305	7,702	3,102	171	412	12,892
Average Sum	200	108·7	77·0	54·4	85·5	68·6	72·4
Avrg. Usance	....	....	....	....	....	....	3·7
No. of Bills ....	1	12	100	57	2	6	178
No. of Months	1	24	300	288	10	36	659

It will be observed that this form is occupied entirely by bills drawn upon stamps of 3*s. 6d.* each, and contains separate columns for bills drawn at an usance of one, two, three, four, five, and six months; there are also calculations at the foot of the form for ascertaining, from the preceding entries, (1) the *total sum* represented by the whole of the bills; (2) the average amount of the bills at each usance; (3) the average usance of all the bills; and (4) the total *number* of bills enumerated at 3*s. 6d.*

Now to each of the five banking houses a schedule was delivered, properly ruled and headed, with a sufficient number of pages under each of the thirteen rates of stamp duty, and under the head of "foreign bills" (as bearing no British stamp), to contain the entry of about one thousand distinct bills of exchange. And it is important to point out, that the only things essential to the perfect accuracy of the return were, that the person employed to compile it should turn over



the bills placed before him one by one, and merely enter the amount of each bill on the page (3s. 6d., 4s. 6d., &c.) and in the column (1, 2, 3, &c., months) to which it might happen to belong. I have every reason to believe that the whole of the returns were filled up with great care, and that the facts they profess to represent may be accepted with entire confidence.

The calculations connected with each return were made under my own superintendence.

When the facts contained in the five Bankers' Returns were thus reduced, the result amounted to this—

*That, by the actual inspection of 4,367 foreign and inland Bills of Exchange, representing the important sum of 1,216,974l., and taken at hazard from an immense mass of bills drawn in London, in the manufacturing districts, in Scotland, in the agricultural districts, and in foreign countries, the average number of Pounds sterling drawn upon each denomination of stamp had been ascertained, and also the average Usance.*

And, as I shall have occasion to point out by-and-by, this was a step in the investigation which had not been previously accomplished in so extensive and systematic a manner. It then only remained to employ the average results founded upon the bankers'\* and brokers' returns in the reduction of the data furnished by the Stamp Office. This was clearly a mere matter of calculation; but I confess that, if I had foreseen, before I undertook the task, the extent and severity of the labour it would impose, I am not at all certain that I should have ventured upon the inquiry. The employment of logarithms, of course, abbreviated the number of figures very much, and every precaution was taken to avoid errors, by the use of paper ruled in such a manner that each individual figure had a niche to itself, and by the enforcement of a system of checks. The following figures are copied from the calculations relative to inland bills in 1847, and the process followed in the calculation will be easily gathered from the tenour of the extract itself:—

*Inland Bills.*

EXAMPLE.

Stamps, 8s. 6d., for year 1847.—Great Britain.

- 43,628l. = amount of stamp duty received at 8s. 6d.
- 428·5l. = average sum borne by stamps of 8s. 6d. each.
- 3·07 = average usance of such bills in months.
- 425 = decimal of 1l. corresponding to 8s. 6d.

Then, 43,628 = λ 4· 6397653  
·425 = λ 1· 6283889

5· 0113764

102,650 = No. of Stamps sold.

\* In other parts of this paper I have referred to these Returns, for the sake of brevity, under the short title of "Bankers' Returns," but I am anxious that it should be clearly understood that under this title I include the five special Returns (four from Bankers and one from the leading Bill-Brokers' House in the City,) which, as in the text above, and in Table III., are sometimes described as "Bankers' and Brokers' Returns."

$$102,650 = \lambda \ 5\cdot0113764$$

$$428\cdot5 = \lambda \ 2\cdot6319508$$

$$7\cdot6433272$$

$$43987000\cdot = \text{in } \text{£s.}, \text{ total sum created.}$$

$$43987000\cdot = \lambda \ 7\cdot6433272$$

$$3\cdot07 = \lambda \ 0\cdot4871384$$

$$7\cdot1561888$$

$$14328\cdot = \text{in } \text{£s.}, \text{ the sum in circulation at one time.}$$

The general results arrived at by this somewhat formidable series of calculations will appear presently; in the meantime, we may conveniently refer to the following table (Table III.), which contains a general summary of the 4,367 bills recorded in the bankers' returns.

TABLE III.

*General Summary of the Five "Bankers' and Brokers' Returns" specially furnished for the purposes of this Inquiry.*

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
Stamps. — Inland Bills.	No. of Bills.	Average Usance.	Total Amount of Bills of each Stamp.	Average Bill.	Per Cent. of				Mr. Leatham's Scale.	
					Group.		Total.		Average Bill.	Usance.
					No.	Amount.	No.	Amount.		
	No.	Months.	£	£	Per Cent.	Per Cent.	Per Cent.	Per Cent.	£	Months.
1s. ....	...	...	...	...	...	...	...	...	5	3
1s. 6d. ...	138	2	2,095	15·2	14·9	9·6	3·1	1	18	3
2s. ....	323	2·9	6,215	19·2	34·9	28·5	7·4	5	23	3
2s. 6d. ...	464	3·1	13,438	28·9	50·2	61·9	10·6	1·3	28	3
(I.)	925	2·7	21,748	21·1	100	100	21·1	1·9	18·5	3
3s. 6d. ...	570	3·3	26,292	46·1	30·5	12·4	13	2·3	50	3
4s. 6d. ...	630	3·7	47,096	74·7	33·8	21·8	14·4	3·8	96	3
5s. ....	366	3·6	57,472	157	19·8	26·8	8·4	4·6	167	3
6s. ....	298	3·8	45	284	15·9	39	6·8	6·9	270	3
(II.)	1,864	3·6	215,505	140·4	100	100	42·6	17·6	145·7	3
8s. 6d. ...	358	3·9	153,429	428·5	48·1	21·9	8·4	12·5	460	3
12s. 6d. ...	227	4	181,715	800·5	30·5	26	5·3	14·8	875	3
15s. ....	100	4·1	149,727	1497·2	13·4	21·4	2·3	12·4	1540	3
25s. ....	27	4·1	70,127	2597·3	3·6	10	6	5·9	2210	3
30s. ....	32	4	144,189	4505·8	4·4	20·7	6	11·8	7000	3
(III.)	744	3·8	699,187	1965·8	100	100	17·2	57·4	2417	3
Inland...	3,533	3·4	936,440	265	...	...	80·9	76·9	...	...
Foreign	834	3·2	280,444	336·2	...	...	19·1	23·1	...	...
TOTALS	4,367	3·4	1,216,884	278·6	...	...	100	100	...	...

[Note.—The only columns of this table which seem to require explanation are the four columns of *per centages*, (cols. 6, 7, 8, 9.) Thus, selecting the 3s. 6d. rate of duty, and reading from left to right, we find the following results.—There were 570 inland bills actually examined bearing 3s. 6d. stamps, having an average *usance* of 3·3 months each, representing a total sum of 26,292l.: and one with another drawn for 46·1l. each. These 570 bills were equal to 30·5 *per cent.* of the whole number of bills (1,864) contained in Group II., and were equal to 13· *per cent.* of the whole number of bills (4,367) contained in the entire table. And the *amount* (26,292l.) of the 570 bills was equal to 12·4 *per cent.* of the whole amount (215,505l.)



in Group II., and to 2·3 per cent. of the *total* amount (1,216,884*l.*) contained in the entire table. For bills at 3*s.* 6*d.* stamp, the researches of Mr. Leatham gave an average *usage* of three months, and an average sum of 50*l.* each. The employment of two sets of per centages—one set for the totals of each group, and a second set for the totals of the entire table—enables the reader to perceive at once what relation each part of the table bears to all the rest. For example,—the *number* of bills at 3*s.* 6*d.* is equal to 13 per cent. of the whole number of bills in the table; but the *amount* of the bills at 3*s.* 6*d.* is only equal to 2·3 per cent. of the whole amount contained in the table. The inference, therefore, is this—that where the number of observations at 3*s.* 6*d.* is so large a portion of the whole (13 per cent.) we may conclude that the results at 3*s.* 6*d.* are near the truth. The average *amounts* of each group (for example, 21·1*l.* for Group I.) are obtained in this table by taking the average of the averages composing each group. The object of the average amount of each group in this case is to indicate the general size of the bills composing it, and this could not be done if the average of the groups was found in the usual, and under other circumstances, the proper manner, of dividing the total results by the total number of the actual facts composing those results—*e. g.* Group I. by dividing 21,748*l.* by 925. It will be well, however, to point out in this place, once for all, that throughout the whole of this inquiry great care has been employed in the calculation of the *averages*, and in no case are the figures given as an average, the mere offspring of previous averages, but are the honest results of comparing *all* the facts with *all* the results. I beg to direct particular attention to this point.]

IV.—*Division of the whole Mass of Bills into three Groups, Reasons for such Divisions, and Uses of it; Bills employed in different Branches of Trade.*

It will be seen that this table (Table III.) is divided into three groups, with reference to the rates of duty; and as several of the subsequent conclusions will be found to depend in an intimate degree upon this classification of the rates of duty, it will be well to explain the reasons which led to its adoption before proceeding further.

In the first place, however, the following abstract (Table IV.) of the general summary already given (Table III.), may be conveniently introduced.

TABLE IV.

*Abstract of the General Summary (Table III.) of the Returns furnished by the Five Banking Houses.*

Groups.	Rates of Duty.	Legal Range.		By Bankers' Returns.			
		At Two Months, or Less.	Above Two Months.	Range.		Average Sum.	Average Usance.
		£    £	£    £	£	£	£	Mths.
I.	{ 1 <i>s.</i> , 1 <i>s.</i> 6 <i>d.</i> , 2 <i>s.</i> , 2 <i>s.</i> 6 <i>d.</i> }	2 to 50	2 to 30	15·2 to	28·9	21·1	2·7
II.	{ 3 <i>s.</i> 6 <i>d.</i> , 4 <i>s.</i> 6 <i>d.</i> , 5 <i>s.</i> , 6 <i>s.</i> }	50 „ 500	30 „ 300	46·1 „	284·	140·4	3·6
III.	{ 8 <i>s.</i> 6 <i>d.</i> , 12 <i>s.</i> 6 <i>d.</i> , 15 <i>s.</i> , 25 <i>s.</i> , 30 <i>s.</i> }	500 & above	300 & above	428·5 „	4505·8	1965·8	3·8

It will be seen that Group I. is confined to small bills, of which the utmost legal limit is 30*l.*; and the average amount, as ascertained by the bankers' returns, is 21·7*l.*, with an *usage* of 2·7 months.

The next group (Group II.) includes bills of a medium size, of which the highest legal limit is 300*l.*; and the ascertained average amount is 140·4*l.*, with an usance of 3·6 months.

The last group (Group III.) contains all bills above 300*l.*

Now the chief object of this classification is to obtain, if possible, some insight into the different causes which influence the extent and fluctuations of different portions of the bill currency; for it is very important to bear in mind that there is a most marked distinction to be drawn between several classes of bills; and that these lines of separation have reference chiefly to the magnitude of the bills themselves.

If I have succeeded in the arrangement of these groups, I have included in

(1). Group III. the bills which are drawn for considerable sums between merchants, producers and manufacturers, and wholesale dealers; and between importers and large consumers of raw material; or, speaking generally, between “merchants and dealers.”

(2). Group II., in like manner, is intended to contain the class of bills drawn between houses of less extent of business, and wielding a less powerful capital, and also between large wholesale houses and the better class of retail dealers; in general terms, between “dealers and retailers.”

(3). Group I. is meant to include the small bills which belong essentially to retail trade, and may be described with considerable propriety as drawn between “retailers and consumers;” or where the acceptor does not happen to be the actual consumer, still carrying on a business of so limited an extent that he is only one step above the class who do literally consume on the supply of their own personal wants the commodities they purchase.

The general result, therefore, is this—that, by the introduction of this arrangement into groups, we have before us, with more or less of completeness, the three great departments into which the trade of the country may be distinguished, with considerable propriety, namely:—

In Group III. we have the trade carried on by what are called “first hands,” that is to say, importing merchants, extensive manufacturers, and the largest class of dealers.

In Group II. we have the trade carried on by what may be called “second hands,” that is, by houses who supply themselves in a great measure from the importers and manufacturers, and, to a considerable extent, come in contact with the actual consumers. This group also includes “first hand” merchants, and manufacturers of comparatively limited capital and connexions.

In Group I. we have the retail trade of the country; such as shopkeepers, small farmers, dealers in cattle, and so on.

It will now be needful to undertake a short review of the history of the question to the present time.

#### V.—*Outline of the History of Bills of Exchange subsequent to 1770; small Bills of last Century.*

It is stated by Mr. Chitty, that bills and promissory notes were not assessed with stamp duty in England before 1782, when the



special exemption which had been created in their favour by the statute of 5th William and Mary, cap. 21, sec. 5, was repealed by the Act of 22 Geo. III., cap. 33, and a scale of duties was imposed, which was very rapidly increased by a series of Acts of Parliament, of which the last became law in 1815 (55 Geo. III. cap. 184).

Previously, however, to the date of the first revenue Act relative to bills and notes (22 Geo III., cap. 33), the attention of the Legislature had been directed, in a somewhat special manner, to certain abuses of this species of paper credit, alleged to exist principally in the north of England.

For some time previous to 1775, when the number of country banks was exceedingly small, and the facilities afforded by their operations, and by the issue of local notes, had scarcely any existence, a practice seems to have gradually grown up, which led dealers and tradesmen of reputed substance to pay the wages of their servants, and some portion of the daily demands against them, in promissory notes of very trifling amount. When this custom had become in a measure established, abuses crept in, and considerable frauds were committed by the surreptitious introduction into the form of the instruments of conditional clauses, which very greatly impaired the remedy of the holder of the note against the issuer, in the event of its dishonour.

On the 27th March, 1775, the subject was brought before Parliament by Sir George Saville, who at that time represented the county of York; and in the course of his speech he stated several facts which, if they had come down to us in a less authentic form, we might with great reason have received only after some hesitation. In the short abstract of the speech of Sir George Saville, given in the Parliamentary History, he is said to have exhibited specimens of these notes, as low as a shilling and eighteenpence. I had heard it stated in Yorkshire that he actually exhibited a promissory note, with several endorsements, for *sixpence*. The record in the Parliamentary History is as follows:—"A.D. 1775, 27th March.—*Small Notes Bill*—Sir George Saville moved the House to go into committee to consider of the evil arising from the circulation in payment of notes of small value. Two witnesses were examined, and several of the notes were exhibited. Some of them *so low as a shilling or eighteenpence*. The evil seemed to be confined to certain trading parts of Yorkshire, where it had been productive of the most iniquitous consequences. A Bill was accordingly ordered to be brought in on the facts stated, to correct the evil complained of." (Parl. Hist., vol. 18, p. 74.)

The Bill here referred to became, in the course of that session, the Statute 15 Geo III., cap. 51 (1775), subsequently continued by 17 Geo. III., cap. 30, and made perpetual by 27 Geo. III., cap. 16. The title of the first Act of the series in 1775 was "An Act to restrain the negotiation of Promissory Notes and Inland Bills of Exchange under a limited sum within that part of Great Britain called England;" and a few sentences from the preamble are worth quoting. For example—"Whereas various notes, bills of exchange, and drafts for money, *for very small sums, have for some time past been circulated or negotiated in lieu of cash* within that part of Great Britain called England, to the great prejudice of trade and public credit, and many of such bills and drafts *being payable under certain terms and restrictions*, which the

poorer sort of manufacturers, artificers, labourers, and others cannot comply with, otherwise than by being subject to great extortion and abuse." And the Act then proceeded to prohibit all notes and bills for less than *twenty shillings* under a penalty of 20*l.*, and the utter illegality of the instrument.

The next Act (17 Geo. III., cap. 30) extended the like prohibition from 1*l.* to 5*l.*, and recited that "the former Act had been attended with very salutary effects."

These measures of the Legislature were effectual in the accomplishment of their objects, and we find no more complaints of the prevalence of infinitesimal bills of exchange.

The comparatively small bills of exchange for sums ranging from 10*l.* to 30*l.*, and higher sums, which were so numerous in Lancashire and Yorkshire during the early part of the present century, had nothing in common with their somewhat discreditable predecessors. These bills were in great favour among the small manufacturers, and among dealers in wool, cattle, and corn. They were proverbial for their dirty appearance, the profusion of their endorsements, and for the much more valuable quality of being very rarely unpaid\*.

Such is a very concise outline of a somewhat curious state of things in the early period of our modern and highly polished system of paper credit. I cannot here pursue the topic further; but it is every way deserving of a careful investigation. Nor can I do more in this place than merely refer to the very able and, considering the period when it was published, extraordinary treatise by Mr. Thornton on paper credit, which appeared in 1802†. If my space had permitted me to indulge in extracts from that treatise, I think I could have shown that Mr. Thornton, even in 1802, had arrived at conclusions with reference to a considerable portion of the paper currency of this country, and especially of bills of exchange, so accurate and comprehensive as, in a great measure, to anticipate fully many of the results which have been subsequently established by elaborate inquiry and discussion. I would also refer very markedly to the critique on Mr. Thornton's book, contributed by Mr. Horner to the first number of the *Edinburgh Review*.

VI.—*Opinions expressed by Lord Overstone and Mr. Burgess, and impliedly sanctioned by the Parliamentary Committee of 1832 and 1840, concerning Fluctuations in the Volume of the Bill Currency.*

I must pass over for the present the incidental discussions relative to bills of exchange which occurred in connexion with the bullion report of 1810, and the reports on cash payments in 1819, in order to allude to the bank charter report of 1832.

In the course of the examination, before the Bank Charter Com-

\* "It is in the recollection of many persons that all the woollen business of the West Riding was conducted by Bills of Exchange at two months' date, as low as 5*l.*, drawn without stamps, with gold for wages, without the intervention of bank notes previous to the last war."—Leatham's *Second Series of Letters on Currency*, 1840, p. 38.

† *An Inquiry into the Nature and Effects of the Paper Credit of Great Britain*, by Henry Thornton, Esq., M.P. London, 8vo., 1802, p. 320.



mittee, of Mr. Henry Burgess (at that time the Secretary of the Association of Country Bankers), well known as the principal writer of a valuable periodical publication, called the "Banker's Circular," a very formal reference was made to the circumstances which determine the amount of bills of exchange in circulation; and Mr. Burgess expressed certain opinions which were subsequently adopted by one of the most distinguished writers of the present time on the subject of the currency,—Lord Overstone (at that time Mr. Jones Loyd). I have nothing to do here with the theoretical grounds of Mr. Burgess' opinions. I confine myself to pointing out what has been the nature of the impressions entertained recently by the highest authorities as to the amount and fluctuations of the bill currency.

In answer to Question 5,334, which inquired of Mr. Burgess—

"Is it the result of your experience that upon a *contraction of the issues of the Bank* taking place *the amount of Bills of Exchange is also narrowed; and is it in the exact ratio, or in a very increased ratio?*" That gentleman answered, "*It is in a very increased ratio.*"

This answer was followed by four elaborate questions and replies, in which it is regarded as certain, both by the examiner and the witness,—that, *as a contraction in the quantity of bank notes in circulation produces directly a much greater relative contraction in the volume of the bill currency*, the influence exercised by the Bank of England upon the trade of the country, in the way of contraction, can only be ascertained with correctness by adding the very large assumed contraction in the amount of bills of exchange to the ascertained moderate contraction in the quantity of bank notes. I beg to point out that, in the evidence before the Charter Committee, this conclusion is not adopted as a matter of hypothesis, but as a matter of fact.

When Lord Overstone was examined before the Committee on Banks of Issue, in 1840—and nothing can be more instructive than the whole of his Lordship's evidence on that occasion—the statements before the Charter Committee relative to bills of exchange were recalled to his notice. In Question No. 2,666, Sir Charles Wood inquired of Lord Overstone (then Mr. Loyd), "*Is the amount of bills of exchange dependent in some degree on the quantity of money?*" and the following answer was returned:—

"*I apprehend that it is dependent in a very great degree.* I consider the money of the country to be the foundation, and the Bills of Exchange to be the superstructure raised upon it. I conceive that Bills of Exchange are an important form of banking operations; and the circulation of the country is the money in which these operations are to be adjusted; any contraction of the circulation of the country will act, of course, upon credit. *Bills of Exchange being an important form of credit, will feel the effect of that contraction in a very powerful degree; they will, in fact, be contracted in a much greater degree than the paper circulation.* This point was adverted to in the inquiries of the Committee of 1832, and the question was put in a very pointed form to Mr. Burgess, the Secretary of the Country Bankers' Association; and I have therefore extracted the question put and his answer to it. '*Is it the result of your experience that upon a contraction of the issues of the Bank taking place the amount of Bills of Exchange is also narrowed; and is it in the exact ratio, or in a very increased ratio?*' '*It is in a very increased ratio.*' *I believe that answer to be perfectly correct.*"—Commons' Report, Banks of Issue, 1840, p. 213.

Any opinion adopted by Lord Overstone must always command the greatest attention; but we shall see presently how difficult it is to

determine upon general grounds of reasoning any conclusion in a case like the present, where we can only speak with confidence when the actual facts have been ascertained and are before us. Unless there is some radical error in the whole of the official data, it will appear that the effects produced by a limitation of bank notes are the exact contrary of those described by Lord Overstone and Mr. Burgess; and that with *fewer* bank notes, there are *not fewer* bills of exchange, but a great deal *more*.

VII.—*The Researches of Mr. Leatham relative to Bills of Exchange; Comparison of Mr. Leatham's data with the data of this Inquiry; Agreements; Differences of considerable moment in data and results.*

I now come to speak of the researches of, I believe, the only inquirer besides myself, who has hitherto attempted to construct a statistical table of the amount of bills of exchange created and in circulation during a given period.

Whatever merit may be due to directing, in the first instance, the attention of the public in a systematic manner to the bill currency, certainly belongs to the late Mr. Leatham, of Wakefield, for many years the able and esteemed head of the banking firm of Leatham, Tew, and Co., of Wakefield and Pontefract.

Mr. Leatham succeeded his father in the business of the banking house, and he was, in the most ample sense of the term, a man entirely conversant with the principles and details of his profession; he was a man also of enlarged views and an enlightened curiosity.

The results of Mr. Leatham's researches on the subject of bills of exchange were laid before the public, in three short publications, in the course of the years 1840 and 1841. The first of these works was a pamphlet of seventy pages, of which I copy the title in a note\*, containing a series of letters, originally private, addressed to the present Sir Charles Wood, Bart., soon after the appointment of that gentleman to be Chairman of the Commons' Committee on Banks of Issue, in 1840. The first edition of this tract was very speedily exhausted, and a second impression was issued in August, 1840; it is called the "First Series" of Letters.

The second work was a pamphlet of thirty-nine pages, addressed to Mr. W. R. Wood, a Manchester merchant, chiefly with reference to the evidence given by that gentleman before the Banks of Issue Committee. This pamphlet was published in January, 1841, and did not reach a second edition; it is called the "Second Series" of Letters.

In June 1841, Mr. Leatham published, on a single sheet, a "General Table of the Currency of Great Britain and Ireland, 1832-1839" (Richardson, Cornhill). This table contains the most complete exhibition of the series of calculations undertaken by Mr. Leatham with reference to bills of exchange.

Mr. Leatham also forwarded to the Glasgow Meeting of 1840 of the British Association for the Advancement of Science a communication embodying the most important conclusions at which he had arrived.

\* Letters on the Currency, addressed to Charles Wood, Esq., M.P. London, P. Richardson, 1840.



On the 19th October, 1842, this very excellent person died at Leamington, at the age of fifty-nine.

If his life had been prolonged for a few years, I believe it was his intention to have consolidated into a more permanent form, and materially to have extended, the publications I have mentioned.

I have been thus careful in referring to the labours of Mr. Leatham, because I am most desirous to award to him the praise which is justly his due, and because I am desirous to afford future inquirers the fullest means of comparing the method and the results of the present investigation with the method and the results of those which have preceded it.

And, in pursuit of the same object, I shall employ Mr. Leatham's own words in describing the procedure by which he arrived at his conclusions.

It appears that, as early as the year 1827, some calculations were instituted by Mr. Leatham relative to the bill currency, and were founded upon Stamp Office returns obtained by Mr. Marshall, at that time a Yorkshire member. (First Series, p. 4.)

I have already explained that the two vital elements in the calculation which determine—

(1) The average *sum* drawn upon each kind of stamp, and

(2) The average *usance* of the bills drawn upon each kind of stamp,—have been ascertained, *in the present instance*, by the systematic record, in a tabular form, of certain particulars collected from 4,367 bills of exchange, representing a sum of 1,216,974*l.* of actual capital engaged in trade and commerce.

I cannot gather from Mr. Leatham's writings that he settled the preliminary parts of his inquiry quite so carefully. I infer rather that he trusted to his great practical experience for the adjustment of an *a priori* scale of average *amounts* and average *usances*, and only referred to his own bill-case for points of confirmation. He says, "I have *assigned* to each stamp the amount of bill it will cover, *taking the medium*, and not the highest amount; and I have *supposed* the average of bills drawn to be at two months' date." (First Series, p. 5.) This statement seems to settle conclusively that the scale of averages was drawn out *a priori*; and the following passage confirms this impression: "The statement was carefully drawn up by the aid of my friend, W. W. Brown, Esq., of Leeds, and our joint cashiers. The proof may be referred to other bankers, but not to stamp distributors, who have not the banker's eye and experience in making the calculations, *nor can they refer to a mass of bills and take promiscuously to the amount of 100,000*l.* or 200,000*l.* for the purpose of ascertaining the average amounts drawn on each denomination of stamp, as well as the average date.*" (First Series, p. 9.)

If it may be inferred from this quotation that the amount of *bond fide* bills actually examined was "100,000*l.* or 200,000*l.*," it would appear that, with a basis, in the *present instance*, of 1,216,000*l.*, the extent of actual data upon which we proceed is about six times as great as that embraced in the researches of Mr. Leatham.

Mr. Leatham appears to have been more uncertain as to the average *usances* than the average *sums* of each kind of stamp. And it appears (First Series, p. 55) that, in finally fixing upon *three months*

as the average date, he was guided by "seven days' experience of the two leading bill-brokers in the City" (I presume Overend, Gurney, and Co., and Sanderson and Co.); and in fixing upon *one-sixth* of the inland bills as the amount of the *foreign* bills, he was also guided by a return obtained from Messrs. Overend, Gurney, and Co. He says, "I have to rest on the return kindly furnished by the leading bill-brokers' firm in the City of the result of seven days' business, and I find it is one-fifth; but in order to err on the safe side, I take it (*i. e.*, the proportion of *foreign* bills) at *one-sixth* of the whole of the inland bills." (First Series, p. 55.)

Referring back to Table III., at page 150, we shall find the scale of average *sums* and average *usances* determined by Mr. Leatham in the manner just pointed out, placed in juxtaposition with the same results as given by the five bankers' returns.

There are some important differences in the *average sums*; but decidedly the variation of greatest moment between Mr. Leatham's elements of calculation and my own, are in the columns of *average usances*.

Mr. Leatham adopts throughout an uniform period of *three months'* usance. On the other hand, the bankers' returns give a widely different result. From them we learn *that the usance increases progressively with the amount of the bill*; for example, that while bills of 20*l.* are drawn at *two months*, bills of 1000*l.* are drawn at *four months*.

It is this difference of usance which accounts chiefly for the very greatly-*augmented* sum in circulation *at one time*, as shown by the present inquiry, over that shown by the calculations of Mr. Leatham, and for a very obvious reason. For example, suppose that for any given year, say 1847, the investigations of Mr. Leatham and myself led to a common result, namely, that the total amount of bills *created* in that year was, say 500,000,000*l.*; now, upon Mr. Leatham's supposition that the average usance of these bills was *three months* (one-fourth of a year), the amount of bills in circulation *at one time* would be of course  $(500,000,000 \div 4)$  125,000,000*l.*; but if, on the other hand, there was good reason to conclude (as there is good reason to conclude) that the average usance is *longer* than three months, say *four months* (one-third of a year), then, with a total volume of bills created equal to 500,000,000*l.*, the amount in circulation *at one time* would be  $(500,000,000 \div 3)$  166,666,666*l.*, or 41½ millions sterling *more* than the result arrived at by Mr. Leatham from data precisely the same as my own, in everything except the element of the *usance*.

And I would beg to refer to this hypothetical illustration as showing very forcibly the necessity of ascertaining the *average usance* with every possible degree of care, and also as indicating that which is perhaps one of the most useful results of the present investigation, namely, the employment, for the first time, of an extensive series of recorded observations for the resolution of this question of usance.

I am happy to say that the differences between the columns of average sums are not so important as to deprive the scale compiled by myself from the bankers' returns of the benefit of being confirmed in several places by Mr. Leatham's figures.

The following abstract will show these results in greater detail:—



TABLE V.

Scales of Average Sums and Average Usances.

Mr. Leatham's Scale More or Less than Scale founded upon Bankers' Returns.

Average Sum.		Average Usance.		Stamps.	Average Sum.		Average Usance.	
Mr. Leatham.	Bankers' Returns.	Mr. Leatham.	Bankers' Returns.		Mr. Leatham.		Mr. Leatham.	
					Less.	More.	Less.	More.
£	£	Months.	Months.		£	£	Mths.	Mths.
18.	15.2	3	2.	1s. 6d.	....	2.8	....	1.
23.	19.2	3	2.9	2s.	....	3.8	....	.1
28.	28.9	3	3.1	2s. 6d.	.9	....	.1	....
50.	46.1	3	3.3	3s. 6d.	....	3.9	.3	....
96.	74.7	3	3.7	4s. 6d.	....	21.3	.7	....
167.	157.	3	3.6	5s.	....	10.	.6	....
270.	284.	3	3.8	6s.	14.	....	.8	....
460.	428.5	3	3.9	8s. 6d.	....	31.5	.9	....
875.	800.5	3	4.	12s. 6d.	....	74.5	1.	....
1540.	1497.2	3	4.1	15s.	....	42.8	1.1	....

The agreement between the scales of average sums is very close up to the rate of duty of 3s. 6d.; but beyond that point, the differences become considerable; and the figures adopted by Mr. Leatham are, with one exception (6s.), *greater* in amount than my own.

The general conclusion, therefore, is this, that, comparing the present inquiry with the inquiry conducted by Mr. Leatham—

- (1) Mr. Leatham's scale of average *sums* was *higher* than my own; and
- (2) Mr. Leatham's scale of average *usances* was *lower* than my own.

In spite, however, of the *higher* money amounts assigned to each bill by Mr. Leatham, the corrected Usance followed by myself has led me throughout to assign a higher figure than Mr. Leatham to the average bill circulation of each of the years to which his calculations applied. Thus—

Inland Bills in Circulation at one time in Great Britain during the Years as under.

Years.	Mr. Leatham.	Present Inquiry.	Present Inquiry. More.
	£	£	£
1835.....	73 millions.	83 millions.	10 millions.
1836.....	88    "	105   "	17   "
1837.....	83   "	95   "	12   "
1838.....	85   "	97   "	12   "
1839.....	98   "	113   "	15   "

A few sentences more will suffice to point out the further features of difference between Mr. Leatham's investigation and the present.

Mr. Leatham's tables extended from 1832 to 1839 (both years inclusive), and embraced a quarterly return for each year. The table, however, embodying these results, applied to the *United Kingdom*

only. For some of the years (1832-39), Mr. Leatham gave the figures separately for *Great Britain*. That gentleman did not extend his inquiry at all to bills *on foreign countries drawn in any part of the United Kingdom*; nor did he attempt any classification of the inland bills into groups or periods; nor found any general trains of reasoning upon the facts developed by his own tables; nor generally profess to do more than direct the attention of the public to the important fact, that the currency of bills of exchange very greatly exceeds in amount all other descriptions of currency put together, and in this he perfectly succeeded.

I have only to add, in this place, the following figures, extracted from the General Table of the Currency, published by Mr. Leatham, in June, 1841:—

TABLE VI.

*Total Amount of Bills, Inland and Foreign, in Circulation at one time in the United Kingdom during the Quarters ended as under, according to Mr. Leatham's Tables.*

Quarters ended	Total Bills.	Quarters ended	Total Bills.
	£		£
5th April, 1832.....	93,555	5th April, 1836 ....	112,874
5th July, „ ..... 87,995		5th July, „ „ .... 113,874	
10th Oct. „ ..... 87,204		10th Oct. „ „ .... 134,003	
5th Jan. 1833..... 87,475		5th Jan. 1837 .... 128,033	
5th April, 1833..... 90,440		5th April, 1837 .... 128,079	
5th July, „ ..... 88,002		5th July, „ „ .... 110,825	
10th Oct. „ ..... 91,952		10th Oct. „ „ .... 111,741	
5th Jan. 1834..... 114,426		5th Jan. 1838 .... 103,936	
5th April, 1834..... 95,880		5th April, 1838 .... 112,166	
5th July, „ ..... 91,118		5th July, „ „ .... 113,413	
10th Oct. „ ..... 97,467		10th Oct. „ „ .... 124,895	
5th Jan. 1835..... 95,839		5th Jan. 1839 .... 114,131	
5th April, 1835..... 98,480		5th April, 1839 .... 128,162	
5th July, „ ..... 101,527		5th July, „ „ .... 129,278	
10th Oct. „ ..... 103,789		10th Oct. „ „ .... 139,924	
5th Jan. 1836..... 101,758		5th Jan. 1840 .... 130,824	

The three 000 at the unit end of each of these sums are omitted; thus £93,555 must be read £93,555,000. In several other Tables in this paper the same arrangement is followed.

#### VIII.—*Descriptive Outline of the manner in which the Circulation of Bills of Exchange is regulated and promoted by the Banking System of London and the Provinces.*

I will now endeavour to give some account of the delicate and widely-ramified system which regulates the distribution and modifies the influence of the bill currency.

In the first place, however, it may be desirable to say a few words on the general principles of the question.

If we consider with care the peculiar functions of (1) *a bank note*,



(2) *a cheque*, and (3) *a bill of exchange*, we shall find that the fund against which the bank note and cheque are issued is in such a form that the bank note and cheque can be discharged in legal money at the moment of their presentation; and that the fund against which the *bill of exchange* is issued is not in such form, but in a form which will only admit of the liquidation of the bill of exchange after the lapse of a certain period of two, three, four, or six months, or perhaps longer. The foundation of the bank note and cheque is a portion of floating capital in a perfectly *ready* state, if I may be permitted to use that word; and the foundation of the bill of exchange is a portion of floating capital in an *unready* state, more or less. Further, the portion of *ready* capital which is the foundation of the bank note and cheque, consists of actual lodgements of coin and of ordinary bankers' deposits, that is, of capital which we can only express in terms of money, and which, by a convenient but somewhat-bewildering fiction, is supposed to be always in the form of actual money. On the other hand, the portion of floating capital which is the foundation of bills of exchange consists most commonly of commodities which are in course of transit to the consumer, and out of the proceeds of the sale of which commodities the liquidation of the bill of exchange is to be accomplished.

If we carefully attend to these distinctions, I think we shall not hesitate to adopt some such classification of the constituent parts of the whole volume of negotiable instruments at present in use in this country as the following:—

1. Coin	4. Bills of Exchange
2. Bank Notes	5. Ledger Accounts;
3. Cheques	

and to admit the substantial correctness of a doctrine which teaches, in effect, that (1) coin is the small change of bank notes, (2) bank notes the small change of cheques, (3) cheques the small change of bills of exchange, and (4) bills of exchange the small change of transactions of barter, the record of which is contained in a ledger, and the adjustment of which is accomplished mainly by the process of set-off: *That, in point of fact, cheques are bank notes drawn against deposits, and bills of exchange are cheques drawn against commodities.*

If this reasoning be correct, it is plain that, when we speak of the *discount* of a bill of exchange, we mean that a portion of the floating capital of the country, in its *ready* form, has been advanced to, say A. B., upon the security of another portion of the floating capital of the country, in its *unready* form. And it is clear that, in the progress of national wealth, the *unready* form of capital precedes that which I have ventured to call *ready*; that the *ready* is the surplus of profit accruing upon the *unready*, and of the portion of increase arising out of *fixed* capital not consumed by the recipients of that increase.

It is also clear that the extent to which advances can be made upon bills of exchange—in other words, the extent to which bills of exchange can be *discounted*—at any given time, is governed by two principal causes: (1) by the total amount of *ready* capital in existence; and (2) by the extent of the demand for ready capital for other purposes, such as loans to governments and landholders, the construction of railways, houses, and so on.

If we examine the system of banking, especially of *Country* bank-

ing, as it has grown up in Great Britain during the last sixty or seventy years, we shall be able to divide the functions of country bankers into two very distinct classes. (I.) In the first place, we shall find that the country bankers are very intimately connected with the control and supply of the requirements of their local circle for ready capital; that is to say, that, in the majority of cases, the most important part of the business of a country bank arises out of the demands for advances and discounts of applicants in its immediate neighbourhood; and this may be called the *internal* part of the country bank system. (II.) In the second place, we shall find that a scarcely less important part of a country banker's business consists in aiding the distribution of ready capital over the country, carrying such capital from the districts where it abounds, or rather where it is in excess of the local demand, to districts where the local demand for ready capital exceeds the local supply; and we may call this the *external* part of a country banker's functions.

Now it has happened that what I have here ventured to call the *internal* province of banking has received more attention from the public and from writers on the currency, and I believe is generally much better understood, than the *external* province; and yet I am by no means sure that, as an auxiliary to the progress of public wealth and industry, the *external* is not a more important part of the general credit system of the country than the *internal* functions of a banker.

A country bank, enjoying a high degree of credit, and skilfully administered, may be said, with great justice, to be the centre of the movements of ready capital within its local circle; and it may be also said, with equal justice, that what the country bank is to its immediate neighbourhood, the bill-brokers and city bankers of London are to the whole of the banking institutions of the United Kingdom. And there cannot be any doubt that the early establishment in London of a central focus, from which the whole banking economy of the island was, in a great measure, preserved in harmonious action, by the skilful adjustment of opposite wants, through a common medium, has been one of the principal causes of the rapid developement of our trade and resources during the present century.

Now, for our present purpose, it is interesting to know that a very considerable—I may say the most considerable—part of the operations connected with the *external* functions of country bankers, is conducted through the medium of *bills of exchange*, in a mode which I will endeavour to describe as briefly and plainly as possible.

In certain parts of the country, chiefly the agricultural counties, the deposits, that is, the ready capital lodged with bankers by local constituents, very greatly exceeds the demand for advances and discounts of a legitimate character by the same local constituents. Then, in these districts, there is a surplus of ready capital over and above the local requirements; and of this surplus, if the country banker cannot find employment for it elsewhere, it is plain that he cannot profitably take charge—at all events, that he cannot pay any interest for its use.

In certain other parts of the country,—namely, those counties and towns conspicuous as the seats of manufactures, mining, and commerce,—the local deposits of ready capital with the bankers are insufficient to satisfy the local demand for advances and discounts.



Here, therefore, the inconvenience is of a character exactly the opposite of that which we have seen to prevail in the agricultural districts.

Now, by what means are the wants of these different parts of the country easily, completely, and profitably satisfied?

By a very simple, but a very perfect, arrangement.

There are in London certain large dealers in money, called Bill-Brokers, who act as bankers of deposit for all the country bankers, and for most of the London regular bankers; who also receive in deposit the floating funds of insurance companies; and generally the funds of any person or persons having the command of considerable amounts of ready capital, or, to use the incorrect phraseology of the day, of large amounts of "ready money." These bill-brokers are also in constant communication with the merchants whose bills they discount, and whose legitimate wants it is their business, in a great measure, to supply.

Now let us observe the way in which the bill-brokers conduct their business.

B, a banker at Lincoln, for example, has a surplus of 50,000*l.* over and above the local demands of his circle. He is also in the constant habit of requiring bills of exchange of certain usances, and of certain amounts to meet the applications of some of his customers, who employ bills of this description in the course of their trade. It is true that B may have in his bill-case a great number of bills of exchange fulfilling these conditions of date and size, and these bills may have been received by him from his local constituents to whom he has advanced the amount in one form or another. They are, therefore, fully his property; and legally there is no reason why he should not immediately re-issue them, if he finds occasion to do so. But against this re-issue there are two conclusive banking reasons: (1) it would, in the first place, indicate that he was poor, because he could not afford to wait until the bills became due; and (2), in the next place, it would disgust his customers by revealing their transactions to rivals in the same branches of business. The bills *locally* discounted cannot, therefore, be *locally* re-issued. The expedient, which removes the difficulty, then takes the following form:—The 50,000*l.* of surplus is sent to a London bill-broker, with a request that he will send to Lincoln bills of exchange of a certain character to the extent of that sum, *plus* the amount of discount, at the rate of the day, due by him upon the transaction; for it must be remembered that B sends 50,000*l.* in *cash*, and receives in exchange 50,000*l.* in bills due some months hence. In fewer words, the Lincoln banker *discounts* 50,000*l.* of bills for the London broker, and the London broker takes care to send to Lincoln bills which have been created in a totally different part of the country—many of them foreign bills—all of them certainly of such a kind that no Lincoln tradesman will be anything the wiser when they come into his hands.

Now it is obvious that this transaction between Lincoln and London accomplishes four things:—(1). The Lincoln banker obtains employment, at the current rate of interest, for his surplus of 50,000*l.*; (2). He obtains in exchange for his money a legitimate banking security, in the form of good bills of exchange, of various amounts, falling due within short and limited periods; (3). The London bill-

broker receives a supply of 50,000*l.* of what is equivalent to cash, with which he can discount a further amount of bills for the merchants; and, finally (4). A bill currency is introduced into Lincoln, perfectly adapted to its wants, and perfectly free from the inconvenience of disclosing local transactions to local competitors.

If we pursue our narrative of the circumstances connected with this supposed operation, we shall become acquainted with most of the facts which concern us at present.

There are three principal modes in which the payment of debts arising in the internal trade of the country are accomplished. In the *first* place, a *buyer* in good credit may have no difficulty in placing his account upon the footing of a book debt, where he is debited with what he purchases from time to time, and credited with what he pays from time to time. In the *second* place, a *buyer* may pay his debts by remitting approved bills of exchange due at the end of some stipulated period—most frequently two, three, or four months; and, *finally*, a *buyer* may undertake to *accept* the bills *drawn* upon him by the *seller*.

It is in carrying out the *first* and *second* of these modes of payment that the *circulation* of bills of exchange is chiefly promoted; and in carrying out the *third* of these modes that the *creation* of bills of exchange chiefly takes place.

To return to the supposition of 50,000*l.* invested in bills of exchange by the Lincoln banker:—

Whatever portion of these bills passed out of the hands of the banker into further circulation would do so as payments and remittances for purposes of trade. A Lincoln tradesman or farmer has brought cattle or goods upon the terms of “a good bill at three months,” and the farmer or tradesman purchases this bill of the banker, retaining the allowance of discount due upon it as an addition to his profit upon the purchase for which the bill is intended to pay. And even if the bill ceases to circulate after being employed in this transaction, it is important to bear in mind that it will have accomplished seven distinct transfers of value. First of all, it conditionally discharges the claim of the drawer upon the acceptor; (2) it then discharged the claim of the payee upon the drawer; (3) then of the bill-broker upon the payee, supposing the payee to discount the bill; (4) then of the Lincoln banker upon the bill-broker; (5) then of the farmer or tradesman upon the Lincoln banker; (6) then of the dealer in goods or cattle upon his Lincoln customer; and (7), if we suppose the bill to be finally sent for payment by the banker of the dealer to that banker’s London correspondent, a seventh transfer would be effected.

I believe that this statement may be received as an accurate outline of the transactions into which a very large portion of the bills of exchange *created* and *accepted* in this country, habitually enter—more particularly of that vastly preponderating part of the bill currency which passes through the hands of the London brokers.

The progress of time and the interests of numerous classes of persons have conspired to impart a high degree of ingenuity and delicacy to the whole economy of the bill circulation. There is, for example, a very nice apportionment of different kinds of discount business to different



houses. A very efficient system is in operation, by means of which the endorsement of bills, from merchants to brokers, and from brokers to bankers, and *vice versâ*, is dispensed with, and the object of this system is to keep as secret as possible the uses to which the bill may have been applied as a security for money lent or borrowed. It would be erroneous, therefore, to suppose that the extent to which a bill of exchange may have circulated is always accurately indicated by the number of endorsements upon it. There is a very complete system of correspondence between the merchants and bankers in the manufacturing and commercial towns where bills of exchange are chiefly created, and the London money market; and, lastly, the plan of rediscounting in London a certain portion of the bills discounted locally, pursued by some of the provincial banks, is carried out with great skill and circumspection by all the parties concerned.

The mercantile houses in London, engaged as wholesale dealers in Manchester and Birmingham goods, and in colonial produce, have always in progress towards maturity an immense number of what are called "small bills," that is, of bills from 20*l.* to 150*l.* drawn upon country dealers and shopkeepers. The usance of these bills is very generally four months. And at certain periods of the year the quantity of these bills is very great. The bills, for example, that are drawn in March, in payment of the summer supply, fall due in July; those drawn in July, preparatory to the autumn, fall due in November; and those drawn in November, in anticipation of the Christmas settlements, fall due in February. With this explanation it is easy to understand why the fourth days of July, November, and February, the days on which these masses of country bills fall due, are among the busiest that happen in the city of London. As a general rule, it is these small bills, of from 20*l.* to 150*l.* each, which enter most actively into the bill circulation of the island, by means of the bankers in the comparatively non-trading counties. We have already seen, for example, how it is convenient for a banker at Lincoln to invest, say 50,000*l.* of his surplus cash in bills of this description. And this skilful redistribution of the bill currency of the country is one of the greatest achievements of our banking system.

We must not, however, conclude too hastily that this perfect machinery of credit has grown up within the last few years. A conclusion of that kind would be exceedingly erroneous. The treatise by Mr. Thornton, published in 1803, shows very clearly that even, at that time, the economy of banking was in a very perfect state; and if we examine the evidence given by Mr. Thomas Richardson\*, an eminent bill-broker of that time, before the bullion committee of 1810, we shall find that even our latest refinements have done little more than preserve a system even then very nicely adjusted.

Mr. Richardson was asked, "What is the nature of the agency for country banks?" and he gave in reply the following answer:—"It is two-fold; in the first place, to procure money for country bankers on bills, when they have occasion to borrow on discount, which is not often the case. And in the next place, to *lend* the money of the country bankers on bills on discount. The sums which I *lend* for country bankers on

\* The founder or precursor of the firm of Overend and Co. At one time, if not originally, the style of that firm was Richardson, Overend, and Co.

discount are *fifty* times more than the sums *borrowed* for country bankers." Now this is a description which applies with as much justice at present as it could do in 1810. In substance, Mr. Richardson meant to say that he received deposits of cash from country bankers and others, in exchange for which he sent them bills of exchange; and that sometimes he rediscounted for country bankers the bills discounted by them for their local customers, and which bills, from some cause or other, the banker desired to turn into cash.

IX.—*Estimates, Statistical and General, of the Amount of the Funds employed in the London Money Market, and at the command of the Provincial Bankers; and also of the Amount of Bills of Exchange constantly under Discount in London and in the Provinces; Series of Tabular Estimates and Statements.*

If I have succeeded in making myself intelligible in the exposition just concluded, it will be apparent that the fund constantly employed in the discount of bills of exchange may, in the first place, be divided into two principal parts, namely:—

I. The fund collected in London, and administered chiefly by the Bank of England and the London bill-brokers; and,

II. The fund remaining in the hands of the Country Bankers, and employed by them in meeting the demand for discounts within their local circles.

It will further be apparent, in the second place, that by far the most considerable of these two funds is that which is collected in London; and that the sources from which the *London discount fund* is derived admit of some such classification as the following, viz.:—

(1). Part of the circulation and deposits of the Bank of England.

(2). The deposits of the country bankers with the London bill-brokers.

(3). Part of the deposits held by the London bankers.

(4). The deposits of assurance companies and other parties with the London bill-brokers.

Now, assuming the correctness of this mere outline of the facts, and I believe that it may be assumed with great safety to be correct in the general form in which it is here employed, I have been desirous to settle, as far as possible, one or two questions of considerable theoretical interest and of some practical moment.

(1). In the first place, it would be very satisfactory if we could ascertain what amount of bills of exchange are always under discount in Great Britain; that is to say, what amount of ready capital is constantly employed in advances to merchants and traders upon the security of bills of exchange, or, what is almost the same thing, upon the security of commodities.

(2). In the next place, it would be very satisfactory to know what portion of this total sum is advanced in Scotland, what portion in the provincial districts of England, and what portion in London. If we could ascertain this, we should be able to estimate numerically the influence which the money market of London exerts over the whole country, and also to estimate numerically the influence which the Bank of England exerts over the money market of London.

(3). In the third place, it would be extremely useful if we could



arrive at some reasonably-safe estimate of the amount of ready capital wielded by the *Country* and by the *London* bankers.

(4). And, finally, it would also be extremely useful if we could be enabled to form a somewhat exact opinion of the amount of the floating balances held in London by Assurance companies and other wealthy corporations and persons.

I cannot hope, and I do not pretend, to answer any of these questions dogmatically; but I have taken some pains to arrive at an approximate estimate with reference to each; and, at all events, I will undertake to describe the whole data upon which I found my reasoning, and the whole process by which I arrive at my conclusions.

The results of the present inquiry have clearly put me in possession, with a tolerable degree of accuracy, of one of the first and most important elements in the investigation, namely, the amount of bills of exchange in existence at one time in the whole of Scotland, the whole of England, and the whole of Lancashire. As we know that some bills are *not* discounted, the amount, therefore, of bills in existence, is of course greater than the amount of the funds employed in the business of discounting. Now what is the ordinary amount of bills in existence at one time, as shown by the calculations of the present paper? The following statement will answer this question:—

TABLE VII.

*Total Average Amount of Bills in Circulation at one time during the Years 1843-46, as shown by the calculations of the present Paper.*

	£
In Scotland (Inland Bills) .....	18,000,000
In Lancashire       ,, .....	12,000,000
In rest of England   ,, .....	70,000,000
	<hr/>
	100,000,000
Foreign Bills .....	16,000,000
	<hr/>
	116,000,000

The next question that occurs is,—What portion of this gross sum of 116,000,000*l.* of bills of exchange is *not* discounted? I am sorry to say that the only answer that can be given to this inquiry must proceed altogether upon estimate. My own estimate is as follows. I arrange the figures, first, in the more convenient form of an

(TABLE VIII.)

*Estimate of the Amount of Bills of Exchange under Discount at one time in Great Britain.*

	£
In Scotland (Inland Bills) .....	15,000,000
In Lancashire       ,, .....	12,000,000
In rest of England   ,, .....	60,000,000
	<hr/>
	87,000,000
Foreign Bills .....	13,000,000
	<hr/>
<i>Total under Discount at one time</i> .....	100,000,000
Leaving, as the amount of Bills and Notes <i>not</i> } discounted by the holders of them .....	16,000,000
	<hr/>
<i>Total Bills in Circulation</i> .....	116,000,000

Now, upon the suppositions expressed in these figures, the amount of bills and promissory notes *not* discounted will be as follows:—

	£
In Scotland (Inland Bills) .....	3,000,000
In Lancashire „ .....	....
In rest of England „ .....	10,000,000
	<hr/>
	13,000,000
Foreign Bills .....	3,000,000
	<hr/>
Total Bills <i>not</i> Discounted.....	16,000,000

I have assumed that the whole of the 12,000,000*l.* shown to be created in *Lancashire are discounted*, because, as I shall have occasion to explain presently, it is quite certain that the Stamp Office returns do not enable us to ascertain the real amount of bills created in that county by a mere reference to the sale of stamps within it.

At first sight, 16,000,000*l.* may seem to be a large amount for the quantity of bills and promissory notes which are *not* discounted; but reasons can be given which at least weaken the force of the first impression.

It must be remembered that a considerable portion of the bills and promissory notes created are intended to serve legal rather than commercial purposes. Of this nature are most of the joint and several promissory notes given to bankers and private persons for temporary loans of money: and obligations of this nature are exceedingly common in the agricultural districts. Further, with many firms of ample capital and long standing it is a sort of point of honour never to part with a bill after it comes into their possession until the time of its maturity. On the whole I am inclined to believe, that if the estimate of 16,000,000*l.* errs at all, the fault is more likely to be one of *under* statement than the contrary.

We have arrived, therefore, at the conclusion that it is very probable that the amount of bills of exchange (inland and foreign) constantly under discount, at one time in Great Britain, is 100,000,000*l.* Now, what are the sources from which this large sum is obtained; and what portion of it is contributed by the provincial and what by the London dealers in money?

We will first inquire into the Provincial part of the question.

In England and Wales, exclusive of London, but including the circle of sixty-five miles round London, within which country-bank notes are forbidden, there are at present about 900 Bank Offices; not separate banking firms, but 900 places where the business of banking, either by means of a central office or a branch office, is daily carried on. After considerable inquiry and reflection, I believe that one with another the amount of capital of all kinds employed by these 900 bank offices is certainly as much as 100,000*l.* each. When I say capital of all kinds, I mean the private capital of the partners and shareholders of the banks invested in their business; the capital placed in the banks by depositors, and by those who keep banking accounts; and the capital acquired by means of the circulation of country-bank notes. For the month ended 29th December, 1849, the amount of country notes in circulation in England and Wales was



6,140,913*l.*, divided among the 900 offices, an amount of capital equal to 6,830*l.* would fall to the share of each office as obtained from the circulation alone. The *private* capital employed in the business of banking in the country is very considerable: and the deposits are also in a great number of cases of surprising extent.

In Scotland there are about 360 bank offices; and I estimate the amount of capital of all kinds employed by them at 100,000*l.* each, the same as on the south side of the border. I confess, however, that as regards Scotland I am not able to speak with the same confidence as with reference to the southern division of the island.

During the four weeks ended 29th December, 1849, the amount of Scotch bank notes in circulation in Scotland was 3,242,448*l.*, or equal to an average sum of 9,000*l.* to each of the 360 bank offices.

In Ireland there are about 170 bank offices; and the Irish circulation of 4,634,503*l.* gives an average sum of 26,900*l.* to each. And it is probable that private capital and deposits raise the average to 100,000*l.*

The following, therefore, will be the recapitulations:—

			£
900 Bank Offices in England and Wales at about 100,000 <i>l.</i> each, or say.....			97,000,000
360 ditto, Scotland	ditto .....		36,000,000
1,260			133,000,000
170 ditto, Ireland	ditto .....		17,000,000
1,430			150,000,000

This sum of 133,000,000*l.* constitutes the gross amount of capital employed in the business of banking in the provincial districts of Great Britain; and, of course, out of this sum of 133,000,000*l.* the bankers have to provide the funds employed: (1) in advances to their customers: (2) in the purchase of government and other securities: (3) in the maintenance of a sufficient reserve of coin and Bank of England notes: (4) in the retention at their credit in London of an adequate floating balance: (5) in investments in bills of exchange procured in London upon the plan pointed out above on the supposed case of the 50,000*l.* from Lincoln: and (6), finally, in the discount of the local bills of their own local connexion.

Still speaking of *Great Britain*, exclusive of London, the following statement will recapitulate these particulars, thus:—

*Estimate of the Proportion of the Gross Banking Capital of Great Britain (exclusive of London) employed in the Principal Divisions of the Business of Banking, namely:*

		£
In advances to Customers; Balances in London; Government Securities; Coin and Bank Notes .....		81,000,000
In Investments in Bills of Exchange obtained from London .....		30,000,000
		111,000,000
In the Discount of Local Bills—		
England and Wales .....	£12,000,000	
Scotland .....	10,000,000	
		22,000,000
		133,000,000

The estimate of 10,000,000*l.* for bills locally discounted in Scotland is made with reference to the peculiarity in Scotch bills of making them payable *not* in London, a circumstance which confines them very much to their own circle.

According to this estimate the amount of capital contributed by the provincial bankers to the London money market is 30,000,000*l.*, namely, the extent of the investments in bills of exchange obtained from London. And to this sum must be *added* the amount of the *floating balances* retained by the country bankers with their London correspondents and brokers.

Let us now turn our attention to the *London* branch of the question.

Including joint-stock banks, and omitting mere dealers in bullion and money changers, there are at present in London 35 City bankers, and 16 West End bankers. The published accounts of the joint-stock banks enable us to state with great accuracy the amount of capital employed by them in their business. And taking the accounts rendered to the 31st December, 1849, by the four principal joint-stock banks, the following is the result:—

TABLE IX.

London Joint-Stock Banks.—*Statement of the Assets of the Four Joint-Stock Banks in the Metropolis, whose operations are confined to London. Compiled from the Accounts of 31st December, 1849.*

Capital paid up.	Banks.	Government Securities, India Bonds, Exchequer Bills.	Discounted Bills, Advances, Bonds, &c.	Total Assets.
£		£	£	£
1,000,000	{ London and Westminster } Bank .....	973,691	3,844,777	4,818,468
422,900	Union Bank .....	Not stated.	3,337,135	3,337,135
600,000	London Joint Stock Bank ....	671,976	2,921,480	3,593,456
128,280	Commercial Bank, London....	Not stated.	699,580	699,580
2,151,180	..... Totals .....	1,645,667	10,802,972	12,448,639
537,795	..... Averages .....	822,833	2,700,743	3,112,159

The average total amount of assets, or of capital employed in these four instances, is as high as 3,112,159*l.* We cannot suppose, however, that a similar average would be afforded by an equally formal statement of the position, either of all the thirty-five City, or all the sixteen West-end bankers. It will be nearer the truth to assume an average of 1,250,000*l.* for each of the fifty-one establishments. And if to the result afforded by such a computation we add 10,000,000*l.* for the deposits of Insurance companies and others, in the hands of bill-brokers and large money dealers, it is probable that we shall at least obtain an approximate estimate of the magnitude of the Metropolitan Banking Fund.

The calculation will then stand thus:—at present excluding the Bank of England.—



35 City Bankers (Private and Joint-Stock) $1\frac{1}{2}$ millions each, say	£44,000,000
16 West End do. ....	20,000,000
	<hr/>
	64,000,000
Insurance Office, &c., Deposits.....	10,000,000
	<hr/>
London Fund .....	74,000,000

To this sum must be added say 12,000,000*l.* for the amount employed by the Bank of England—speaking generally—in *commercial* loans and discounts. And there must also be added the sum of 30,000,000*l.*, which we have already seen that the Country bankers contribute to the London money market, in exchange for the usual kind of bills; but this 30,000,000*l.* must *not* be increased for our present purpose by the *floating balances* of the Country bankers, because we have just reckoned those balances in the average sum of  $1\frac{1}{4}$  millions assigned to each of the fifty-one London bankers.

We have, therefore, a further summary of results, thus:—

London Fund, as before shown .....	£74,000,000
Bank of England.....	12,000,000
	<hr/>
Total London Fund .....	86,000,000
Contributed by Country Bankers to London Fund	30,000,000
	<hr/>
	116,000,000

We have already estimated that—

(1.) The total amount of Bills under discount at one time	£
in <i>Great Britain</i> including London is .....	100,000,000
(2.) The amount of Bills under discount	
locally in Scotland is, say.....	£10,000,000
(3.) Ditto, England.....	12,000,000
	<hr/>
	22,000,000
	<hr/>
Leaving .....	78,000,000

as the amount of bills discounted from the *resources*, or by the *intervention* of London. Of this 78,000,000*l.*, we have seen that 30,000,000*l.* are carried off by the Country bankers, leaving us the amount discounted in London, purely by the aid of *London* resources, a sum of 48,000,000*l.* Of this 48,000,000*l.*, a sum of 5,000,000*l.* is generally taken by the Bank of England. The following, therefore, will be the conclusion.—

*Bills (Inland and Foreign) under Discount at one time in Great Britain, including London.*

I. Discounted locally—	
In Scotland .....	£10,000,000
In England .....	12,000,000
	<hr/>
	22,000,000
II. Discounted in London—	
With Country Funds .....	£30,000,000
By Bank of England .....	5,000,000
With London Funds .....	43,000,000
	<hr/>
	78,000,000

Total under discount at one time..... £100,000,000

We saw above, that the amount of capital at the command of the London bankers may be estimated at 64,000,000*l.*, and that the

deposits of Insurance companies, &c., might be taken at 10,000,000*l*. To this 10,000,000*l*., we must add 33,000,000*l*., to make the amount of 43,000,000*l*. employed in discounts. The greatest portion of this 33,000,000*l*. is no doubt furnished by the London bankers, either in direct discounts to their own constituents, or in indirect modes. But, if even 30,000,000*l*. was contributed by the bankers, there would still remain 34,000,000*l*. (64—30) to be employed by them in purchases of Government stock, in advances and loans upon various kinds of security, and in the maintenance of an adequate cash reserve.

We may now reduce to a general outline the results at which we have arrived by the aid of these computations.

At page 29, we reckoned only the 12,000,000*l*. generally employed by the Bank of England in *commercial* advances and discounts. In forming, however, an estimate of the whole of the funds engaged in the London money market, and employed in the various modes of investment and the various kinds of banking business common in the metropolis, it is obviously incumbent upon us to extend our view from that portion (12,000,000*l*.) of the resources of the Bank of England employed in exclusively commercial operations to the whole of the fund at the command of that body, whether furnished by the circulation or by the public and private deposits of the Bank of England. According to this view of the case, we must compute the share of the London fund belonging to the Bank of England, not at 12,000,000*l*., but at 36,000,000*l*.

We may say, therefore, that, as far as we see at present, the whole of the fund constantly employed in the money market of London is composed as follows:—

	£
London Bankers .....	64,000,000
Deposits of Assurance Companies and others .....	10,000,000
Bank of England.....	36,000,000
Country Funds .....	30,000,000
	<hr/>
	£140,000,000

The principal kinds of employment which absorb the whole, or nearly the whole, of this very large sum, may be arranged thus:—

1. Bullion in Bank of England.
2. Investments in Government securities.
3. Investments in Bonds and other securities.
4. Advances to merchants on various securities and under various circumstances.
5. The discount of foreign and inland Bills of Exchange.
6. The maintenance by bankers and money dealers of adequate Reserves of coin and bank notes in their own hands.

The extent to which the Bullion in the Bank of England absorbs the 140,000,000*l*. is, of course, readily ascertained at any given date. I have not ventured to offer any estimate of the extent of any of the remaining five modes of employing these funds, with the exception of the fifth, viz., the sums engaged in discounting bills, and these sums I have, as already seen, estimated at 48,000,000*l*., including in that amount 5,000,000*l*. from the Bank of England.

The following figures will represent the *per centage* proportions of the several constituent elements of the 140,000,000*l*.:—



	Per Cent.
London Bankers .....	45.71
Assurance Companies, &c. ....	7.14
Bank of England .....	25.71
Country Funds .....	21.44
	<hr/> 100.00

It will be observed, from these figures, that a very considerable portion of the total amount is furnished by the Bank of England and by the Country bankers. Thus, the funds administered by the Bank of England amount to more than *one-half* of the sums furnished by all the other contributors in London to the general fund of 140,000,000*l.*, and the amount furnished by the Country bankers approaches very nearly to that furnished by the Bank of England.

Further, continuing our assumption that the amount of bills of exchange constantly under discount at one time is 100,000,000*l.*, the following figures will represent the *per centage* proportions of that sum furnished from the various quarters. Thus:—

<i>Bills under Discount.</i>	Per Cent.	Per Cent.
In Scotland .....	10	
In England (except London) .....	12	
	<hr/>	22
<i>In London—</i>		
With Country Funds .....	30	
By Bank of England .....	5	
With London Funds .....	43	
	<hr/>	78
		<hr/> 100

We observe, again, in these figures, the considerable extent of the influence of the Bank of England and of the Country bankers. It appears, for instance, that, even in ordinary seasons, the discounts by the Bank of England are about *one-eighth* (5 to 43) of those absorbed by all other parties from London resources, and that of the total amount of discounts in London, more than three-fourths (30 to 78) are effected by funds obtained from the provinces.

X.—*Needful Corrections of Data furnished by Stamp Office; Series of Statistical Tables, containing general Results of the present Inquiry.*

In the former part of this paper I have very fully described the data upon which I have proceeded in my calculations, and the manner in which those calculations have been worked out. I now proceed to introduce certain tables, which exhibit the statistical results of this inquiry for the twenty years from 1828 to 1847 (both inclusive), embraced within it; and with reference to the *whole* of Great Britain, the *whole* of England, the *whole* of Scotland, and to the county of Lancaster, and the county of Chester.

I regret that the Stamp Office returns only enable me to give the bill currency for *England* and *Scotland* from 1832 to 1847 (both inclusive), and for Lancashire and Cheshire from 1830 to 1847 (both inclusive).

It will be convenient, before proceeding further, to introduce the following particulars from the Census of 1841 with reference to Lancashire and Cheshire.

TABLE X.

Lancashire and Cheshire.—*Extract from Census Returns of 1841 of certain Particulars relative to the Industry and Commerce of these Counties.*

	Commerce, Trade, Manufac- ture.		Agricul- ture.		Labour- ers.		Domestic Servants.		Independ- ent Means.		Alms- People.		Foregoing Cols.	Rest of People.
	L.	C.	L.	C.	L.	C.	L.	C.	L.	C.	L.	C.	L.	C.
Percent. on Total Occupa- tions ....	62·9	52·9	6·7	15·1	10·2	8·2	9·8	13·6	4·4	4·8	1·7	1·3	....	....
Percent. on Total Popula- tions. }	28·1	23·5	3·	6·7	4·6	3·7	4·4	6·1	2·	2·1	·7	·6	44·6	55·4

	Area Acres.	Population, 1841.
Lancashire .....	1,117,260	1,667,054
Cheshire .....	649,050	395,060

It is important that we should clearly understand that the Stamp Office returns of bill stamps sold in provincial towns and districts cannot be accepted with safety as correct indications of the true number of bills of exchange (inland and foreign) created in those provincial places. Upon all purchases of stamps (bill stamps among the rest) of a certain amount at the head office of the Board of Inland Revenue, at Somerset House, a certain rate of discount is allowed to the purchasers—I believe  $1\frac{1}{2}$  per cent. Hence it happens that to all large consumers of bill stamps in the country there is a strong inducement, *not* to purchase the stamps they require of the *local* vendor, but to send for them direct from London. And this is actually done to a considerable extent from all parts of Great Britain, but, I believe, particularly from Lancashire. The effect upon the returns of bill stamps sold is therefore this—that the number of stamps sold *in London* is greater than the number of bills created in London; and that the number of stamps sold in the country, especially in Lancashire, is less than the number of bills created in the country, or in Lancashire.

It would be taking an exaggerated view, however, to suppose that the purchases of bill stamps in London by *country* merchants and manufacturers are so extensive as to deprive the actual accounts rendered by the Stamp Office of all value with reference to the bill circulation of the provinces. I am persuaded that even in their present form the Stamp Office accounts exhibit a very faithful outline of the country bill circulation; and I draw attention to the circumstance just stated, simply for the purpose of preventing misapprehension, and as a warning that 12,000,000*l.* must not be regarded as the *whole* amount of inland bills created in Lancashire.

We are now prepared to receive the following table (Table XI.), which exhibits the general results of the present inquiry in a statistical form.



TABLE XI.—Inland Bills.—Total Amount in Circulation at one time in Great Britain and certain parts of it as under, during the Twenty Years 1828—1847 (both inclusive); with columns showing the Per Centage above or below the General Average, of the Bill Circulation of each year, and of each of the Six Groups of Years.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
Years.	Great Britain.			England.			Scotland.			Lancashire.			Cheshire.		
	£	—	+	£	—	+	£	—	+	£	—	+	£	—	+
1828.....	80,908	13.5	..	..	..	..	..	..	..	..	..	..	..	..	..
1829.....	78,946	15.5	..	..	..	..	..	..	..	..	..	..	..	..	..
1830.....	74,034	20.8	..	..	..	..	..	..	..	6,272	41.9	..	315	27.8	..
1831.....	81,490	12.8	..	..	..	..	..	..	..	6,676	38.2	..	327	25.	..
Average .....	78,845	15.6	..	..	..	..	..	..	..	6,474	40.1	..	321	26.4	..
1832.....	72,215	22.7	..	58,606	25.9	..	13,603	21.8	..	6,740	37.6	..	302	30.7	..
1833.....	80,589	13.8	..	66,893	15.5	..	14,092	18.9	..	7,440	31.1	..	339	22.2	..
1834.....	78,549	16.	..	64,327	18.7	..	14,203	18.3	..	8,401	22.2	..	327	25.	..
1835.....	83,942	10.2	..	69,839	11.7	..	14,098	18.9	..	10,055	6.9	..	403	7.6	..
Average .....	78,824	15.7	..	64,916	18.	..	13,999	19.5	..	8,159	24.4	..	343	21.3	..
1836.....	105,562	..	12.9	86,589	..	9.4	15,823	9.	..	12,135	..	12.3	455	..	4.4
1837.....	95,035	..	1.7	78,908	.3	..	16,119	7.3	..	12,537	..	16.	551	..	26.4
1838.....	97,722	..	4.6	80,703	..	2.	17,020	2.1	..	12,363	..	14.6	626	..	43.6
Average .....	99,440	..	6.4	82,066	..	3.7	16,321	6.1	..	12,345	..	14.3	544	..	24.8
1839.....	113,119	..	21.	93,114	..	17.7	19,996	..	15.	15,693	..	45.3	629	..	44.3
1840.....	116,319	..	24.4	92,099	..	16.4	20,069	..	15.4	14,367	..	33.	478	..	9.6
1841.....	107,903	..	15.4	87,567	..	10.6	20,316	..	16.8	12,654	..	17.1	436	..	..
1842.....	92,751	.8	..	75,978	4.	..	16,761	3.6	..	10,984	..	1.7	379	13.1	..
Average .....	107,524	..	15.	87,189	..	10.2	19,285	..	10.9	13,424	..	24.3	480	..	10.1
1843.....	87,659	6.2	..	70,038	11.5	..	15,467	11.	..	10,238	5.3	..	380	12.8	..
1844.....	91,004	2.6	..	75,010	5.2	..	15,222	12.4	..	11,072	..	2.5	407	6.7	..
1845.....	106,030	..	13.4	86,570	..	9.4	19,436	..	11.8	12,655	..	17.1	502	..	15.1
1846.....	112,532	..	20.4	89,944	..	13.7	22,580	..	29.9	13,299	..	23.1	559	..	28.2
Average .....	99,306	..	6.2	80,390	..	1.6	18,176	..	4.5	11,816	..	9.3	462	..	6.
1847.....	113,161	..	21.	89,859	..	13.5	23,285	..	33.9	..	..	..	..	..	..
Avg. of whole Table	93,473	..	..	79,127	..	..	17,380	..	..	10,798	..	..	436	..	..

[*Note to Table XI.*—In this table, the three 0's (000) at the unit end of each amount are omitted. Thus, 80,908 must be read 80,908,000*l.*, and 315 must be read 315,000*l.* The *average* lines will pretty clearly explain themselves. For example, 78,845,000*l.* is the average yearly amount of Inland Bills of Exchange in circulation at one time in Great Britain during the group or term of four years from 1828 to 1831, both inclusive; and passing to the last line of the table, we find that 93,473,000*l.* was, in like manner, the similar average for the whole of the twenty years embraced in the inquiry, that is, 1828-1847. These observations will explain the other lines of average sums. The columns of *per centages* may also be alluded to here. It will be seen that the whole of the per centages are measured from the General Averages of the table, as from a fixed datum line. Thus, selecting col. 2 (Great Britain), it appears that 80,908,000*l.* (year 1828) is 13·5 per cent. *less* than 93,473,000*l.*, the general average of col. 2; and also that 78,845,000*l.* (average 1828-31) is 15·6 per cent. *less* than the same sum of 93,473,000*l.* The *per centage* cols. also afford a ready means of ascertaining the difference per cent. between any two amounts in any of the cols. of the table, as far as these differences can be ascertained, by measuring throughout from a third and uniform number, found, in this instance, in the general average line of the table. Thus—still adhering to col. 2 (Great Britain)—it appears that the Inland Bill circulation of the year 1828 was 13·5 per cent. *below* the general average of the twenty years, and that the average circulation of 1828-31 was 15·6 per cent. *below* the same general average; and of course it is very apparent that, between the amounts of 80,908,000*l.* (year 1828) and 78,845,000*l.* (years 1828-31), there is a difference of 2·1 per cent., as measured from a fixed point. I have been thus careful in my reference to the reading and construction of this table, because what has now been said will apply to several subsequent tables of the same character.]

Of the detailed results contained in the last table (Table XI.) the following abstract of the average bill circulation of the six *groups* or terms of years into which the twenty years 1828-1847 have been divided, will be found convenient.

TABLE XII.

Average *Total Amounts of Inland Bills in Circulation* at one time *during the following Terms of Years; and also during the whole of the Twenty Years 1828-47, with columns of Per Centages above or below the general average of the table.*

INLAND BILLS.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
Years.		Great Britain.			England.			Scotland.			Lancashire.			Cheshire.		
No.		£	—	+	£	—	+	£	—	+	£	—	+	£	—	+
4	1828—31 ...	78,845	15·6	...	...	...	...	...	...	...	6,474	40·1	...	321	26·4	...
4	1832—35 ...	78,824	15·7	...	64,916	18·	...	13,999	19·5	...	8,159	24·4	...	343	21·3	...
3	1836—38 ...	99,440	...	6·4	82,066	...	3·7	16,321	6·1	...	12,345	...	14·3	544	...	24·8
4	1839—42 ...	107,524	...	15·	87,189	...	10·2	19,285	...	10·9	13,424	...	24·3	480	...	10·1
4	1843—46 ...	99,306	...	6·2	80,390	...	1·6	18,176	...	4·5	11,816	...	9·3	462	...	6·
1	1847 .....	113,161	...	21·	89,859	...	13·5	23,285	...	33·9	...	...	...	...	...	...
20	General Avg.	93,473	...	...	79,127	...	...	17,380	...	...	10,798	...	...	436	...	...

The three 000 on the right of the above sums are omitted. Thus, for example, 78,845 represents £78,845,000, and 321 represents £321,000.—See Note to Table XI., above.

I continue these statistics by introducing next in order the following three tables (Tables XIII., XIV., and XV.), which contain a statement in detail of the bill circulation from 1828 to 1847, in the form in which it appears, when the general mass of bills is divided into the Three Groups (I., II., III.) described at some length in the early part of the paper (see pages 150 and 152, *ante*). It will be my duty in the next general division of the subject to discuss at some length the facts contained in the series of tables which occur in this part of the paper.



TABLE XIII.

Inland Bills.—Group I.—(consisting of Bills of the Average Amount of £21·1 each, and an Average Usance of 2·7 months each; and ranging from £15·2 to £28·9, as by “Bankers’ Returns,” at page 150)—Total Amount of Inland Bills of this Group in circulation at one time in Great Britain and the parts of it as under, during the Twenty Years 1828—1847, both inclusive; with columns of the Per Centage above or below the General Average of the Bill Circulation in Group I. of each year.

## GROUP I.

Years.	Great Britain.			England.	Scotland.	Lanca- shire.	Cheshire.
	£	— Per Cent.	+ Per Cent.	£	£	£	£
1828.....	7,076	....	12·3	....	....	....	....
1829.....	7,025	....	11·5	....	....	....	....
1830.....	6,677	....	6·	....	....	222	27
1831.....	6,569	....	4·2	....	....	201	29
Average .....	6,837	....	8·5	....	....	212	28
1832.....	6,288	·2	....	5,006	1,281	196	25
1833.....	6,304	....	....	5,461	1,242	168	26
1834.....	5,900	6·4	....	4,673	1,226	166	24
1835.....	6,067	3·7	....	4,894	1,172	178	24
Average .....	6,139	2·6	....	5,008	1,230	177	25
1836.....	6,283	·3	....	5,146	1,175	187	32
1837.....	6,417	....	1·8	5,159	1,255	215	44
1838.....	6,435	....	2·1	5,160	1,271	213	44
Average .....	6,378	....	1·2	5,155	1,234	205	40
1839.....	6,588	....	4·5	5,237	1,325	223	48
1840.....	6,710	....	6·5	5,387	1,321	239	46
1841.....	6,589	....	4·5	5,308	1,280	234	44
1842.....	6,368	....	1·	5,123	1,241	205	46
Average .....	6,564	....	4·1	5,264	1,292	225	46
1843.....	5,514	12·5	....	4,986	1,127	192	48
1844.....	5,947	5·6	....	4,886	1,058	172	43
1845.....	5,904	6·3	....	4,875	1,027	194	47
1846.....	5,889	6·6	....	4,881	1,008	219	46
Average .....	5,813	7·8	....	4,907	1·055	194	....
1847.....	5,961	5·4	....	4,966	992	....	....
Average of } whole Table }	6,325	....	....	5,070	1,188	201	32

The three 0's (000) at unit end are omitted.—See Note to Table XI., page 176.

TABLE XIV.

Inland Bills.—Group II.—(consisting of Bills of the Average Amount of £140·4 each, and the Average Usance of 3·6 months each; and ranging from £46·1 to £284, by “Bankers’ Returns,” at page 150)—Total Amount of Inland Bills of this Group in circulation at one time, 1828—1847, as explained in title of Table XIII.

## GROUP II.

Years.	Great Britain.			England.	Scotland.	Lanca- shire.	Cheshire.
	£	— Per Cent.	+ Per Cent.	£	£	£	£
1828.....	35,833	....	2·3	....	....	....	....
1829.....	34,231	2·2	....	....	....	....	....
1830.....	32,618	6·9	....	....	....	2,236	135
1831.....	33,737	3·7	....	....	....	2,182	145
Average .....	34,105	2·6	....	....	....	2,209	140
1832.....	32,099	8·3	....	25,608	6,488	2,151	133
1833.....	34,352	1·9	..	27,641	6,710	2,049	147
1834.....	33,080	5·5	....	26,392	6,686	2,159	135
1835.....	34,115	2·6	....	27,638	6,473	2,425	165
Average .....	33,411	4·6	....	26,820	6,589	2,196	145
1836.....	38,065	....	8·7	31,436	6,892	2,569	198
1837.....	36,909	....	5·4	29,945	6,962	2,749	246
1838.....	37,900	....	8·2	30,666	7,242	2,852	270
Average .....	37,625	....	7·5	30,682	7,032	2,723	238
1839.....	41,900	....	19·7	33,776	8,143	3,333	294
1840.....	41,826	....	19·4	33,905	7,920	3,297	249
1841.....	39,847	....	18·8	31,918	7,912	3,093	221
1842.....	34,653	1·	....	28,142	6,508	2,538	207
Average .....	39,556	....	13·	31,935	7,621	3,065	243
1843.....	32,286	7·8	....	26,421	5,863	2,276	211
1844.....	33,272	5·	....	27,451	5,817	2,117	228
1845.....	35,913	....	2·6	29,648	6,244	2,237	256
1846.....	36,622	....	4·6	29,786	6,830	2,369	271
Average .....	34,523	1·4	....	28,327	6,189	2,249	242
1847.....	36,768	....	5·	30,038	6,721	....	....
Average of whole Table }	35,801	....	....	29,401	6,838	2,502	206

The three 0's (000) at unit end are omitted.—See Note to Table XI., page 176.



TABLE XV.

Inland Bills.—Group III.—(consisting of Bills of an Average Amount of £1965·8 each, and an Average Usance of 3·8 months each; and ranging from £428·5 to £4505·8, by “Bankers’ Returns,” at page 150)—Total Amount of Bills of this Group in Circulation at one time, 1828—1847, as explained in title to Table XIII.

## GROUP III.

Years.	Great Britain.			England.	Scotland.	Lanca- shire.	Cheshire.
	£	— Per Cnt.	+ Per Cnt.	£	£	£	£
1828.....	37,999	25·6	....	....	....	....	....
1829.....	37,690	26·1	....	....	....	....	....
1830.....	34,739	32·	....	....	....	3,814	153
1831.....	41,184	19·3	....	....	....	4,293	153
Average .....	37,903	25·8	....	....	....	4,053	153
1832.....	33,828	33·7	....	27,992	5,834	4,393	144
1833.....	39,933	21·8	....	33,791	6,140	5,223	166
1834.....	39,569	22·5	....	33,262	6,291	6,076	168
1835.....	43,760	14·2	....	37,307	6,453	7,452	214
Average .....	39,272	23·	....	33,088	6,179	5,786	173
1836.....	61,214	....	20·	50,007	7,756	9,379	225
1837.....	51,709	....	1·3	43,804	7,902	9,573	261
1838.....	53,387	....	4·6	44,877	8,507	9,298	312
Average .....	55,437	....	8·6	46,229	8,055	9,417	266
1839.....	64,631	....	26·7	54,101	10,528	12,137	287
1840.....	67,783	....	32·9	52,807	10,828	10,831	183
1841.....	61,467	....	20·5	50,341	11,124	9,327	171
1842.....	51,730	....	1·4	42,713	9,012	8,251	126
Average .....	61,403	....	20·3	49,990	10,373	10,136	192
1843.....	49,859	2·3	....	38,631	8,477	7,770	121
1844.....	51,785	....	1·5	42,673	8,347	8,783	136
1845.....	64,213	....	25·9	52,047	12,165	10,224	199
1846.....	70,021	....	37·2	55,277	14,742	10,711	242
Average .....	58,970	....	15·6	47,157	10,933	9,372	174
1847.....	70,432	....	38·1	54,855	15,572	....	....
Average of whole Table	51,046	....	....	44,649	9,354	8,090	191

The three 0's (000) at unit end are omitted.—See Note to Table XI., page 176.

XI.—*Foreign Bills (i.e., Bills drawn upon Great Britain); Method of ascertaining the Amount of these in Circulation at one time; General Table exhibiting the Results of Mr. Leatham's Researches, and also the Results, in a general Form, of the present Inquiry.*

The tables introduced so far exhibit the circulation of *Inland* bills of exchange, that is, of bills (as explained in the early part of the paper—see page 145) *drawn and accepted* in some part of *Great Britain*, and bearing the stamp duties imposed by the Act of 55 Geo. III., cap. 184. Of these bills the returns of the Stamp Office enable us to take an accurate account at least as to *number*. But besides these *inland* bills there are in circulation, to a large amount, other bills of exchange, called *Foreign Bills*, drawn out of the *United Kingdom*, upon *Great Britain*, and *accepted* and payable within *Great Britain*. I have already explained that these *foreign* bills bear *no* British stamp duty, and are *not* included, therefore, in the returns issued by our Board of Inland Revenue. The only way in which any estimate can be formed of the amount of *foreign bills* in circulation at one time is by instituting very careful inquiries relative to the proportion borne by the amount of foreign bills to the amount of inland bills in the course of actual business transactions of considerable magnitude.

Mr. Leatham\* instituted such inquiries with great judgment, and he came to the conclusion that the *foreign* bills in circulation at one time might be assumed to be equal to *one-sixth* of the *inland* bills in circulation at one time; that is to say, that if the *inland* bills amounted to 90,000,000*l.*, the *foreign* bills would amount to 15,000,000*l.*, making the *total* bill circulation, according to such a supposition, 105,000,000*l.*

I have endeavoured to follow up the researches of Mr. Leatham on this point, and all the evidence I have been able to collect quite impresses me with the belief that Mr. Leatham's estimate of *one-sixth*, as the proportion borne by the foreign to the inland bills, is very near the truth.

In the returns furnished to me by the five banking houses, the facts with reference to foreign bills were these (see Table III, page 8.)

The five bankers' returns contained a

Total number of .....	4,367 Bills.
Of these Bills there were, of	
Foreign Bills.....	834
Inland .....	3,533
	----- 4,367

And passing from the *number* of bills to the *amount* in sterling represented by them, the facts were these—

Total Amount .....	£1,216,884
Inland Bills .....	£936,440
Foreign ,, .....	280,444
	----- 1,216,884

\* "My next step to ascertain the proportion of *foreign* bills circulating, to the whole mass of the *inland* bills, has been attended with more difficulty; but in the absence of other concurring testimony I have to rest on the return kindly furnished by the leading Bill Brokers' firm in the City of the result of seven days' business, and I find it is *one-fifth*: but, to err on the safe side, I take it at *one-sixth* of the whole of the *Inland Bills*."—Leatham's First Series, p. 55.



The proportion, therefore, borne by the *foreign* to the *inland* bills, as shown by the 4,367 observations of the bankers' returns will be expressed by the following *per-centages* of the *numbers* and the *amounts*. Thus—

	Amount. Per Cent.	Number. Per Cent.
Inland Bills.....	76·96	91·14
Foreign Bills .....	23·04	18·86
	100·	100·

These figures exhibit the *foreign* bills as bearing to the *inland* bills the proportion of rather less than *one-third* as to *amount*, and of *one-fifth* as to *number*.

I am by no means sure, however, that the facts contained in the bankers' returns can be received with safety as a fair sample of the general bill circulation of the country as regards foreign bills; and I prefer to adopt the conclusion of Mr. Leatham (*one-sixth*), because the tenour of my own general observation is most in consonance with it, and because there are other reasons in its favour, which I will endeavour to point out.

In the first place, the general result of 23·04 *per cent.* on the total *amount* of bills contained in the bankers' returns, is the medium expression of very wide departures from an average result. I omit the names of the firms, but the following are the figures:—

*Per Centages of the Amount of Foreign Bills in the several Bankers' Returns when compared with the Amount of Inland Bills.*

Return.	Foreign Bills.
A .....	10·5 per cent. of Inland Bills.
B .....	46·6       "       "
C .....	17·7       "       "
D .....	31·9       "       "
E .....	35·       "       "

In the next place, by assuming *one-sixth* as the proportion of *foreign* bills, we should have generally to assume the existence of about 17,000,000*l.* of such bills, as being in circulation at one time; and as the usance of this kind of paper may be stated generally to be *three* months, it would follow that the amount of foreign bills drawn upon this country in the course of a year would be about 68,000,000*l.*—a sum which approaches near to what we know to be the value of our imports, although, as will appear from a subsequent section of this paper, an apparently corroborative circumstance of this nature can only be received subject to several important reservations. At the same time, I am quite ready to admit that the highly important question of the exact proportion borne by the foreign to the inland bills of exchange in circulation has yet to be settled. Till further evidence be collected, I have taken the proportion at *one-sixth*, as it was taken by Mr. Leatham.

It is to be observed, however, that, from the nature of the calculations by which we arrive at any estimate whatever of the amount of *foreign* bills in circulation at one time in Great Britain, we are compelled to rest satisfied with a result which applies equally to each of a series of years, notwithstanding that in many of these years, it is quite certain that the amount of the foreign bill currency was either more or less than the amount of the same currency in the immediately preceding or subsequent, or some other year of the series. For example, I have pointed out that the best evidence we can collect seems to warrant the conclusion that the proportion of the foreign to the inland bills is one-sixth; then it is plain that a general rule of this nature, when applied to a series of years, makes the *estimated* amount of the foreign bills in each year depend absolutely on the *ascertained* amount of inland bills in that year, notwithstanding that the rule of one-sixth was adopted at a former period, when, perhaps, the circumstances of the import trade of this country might be different from what they were in subsequent years. In a few words, while we have the means of ascertaining the fluctuations of the *inland bills from year to year* with accuracy, we have no such means of forming a statistical table of the fluctuations of *foreign bills* from year to year.

It is only needful to add here, with reference to *foreign bills*, that the 834 of such bills included in the bankers' returns gave 336·2*l.* as the *average amount*, and 3·2 months as the *average usance* of foreign bills.

The only remaining point to be explained before introducing the following table has reference to the drafts by Country bankers in Great Britain, drawn upon their London correspondents. The stamp duty on these drafts or bills is compounded for by the Country bankers along with the stamp duty on the ordinary country-bank notes issued by them and payable to *bearer* on demand. Mr. Leatham estimated that the amount of *bankers' drafts* might be taken at *one-sixth* of the amount of country-bank notes in circulation. This would give but an inconsiderable sum (about 500,000*l.*), and I have not attempted to include it in the calculations of this paper. It was included, however, by Mr. Leatham, as will be seen from the following table (Table XVI.).

That table also brings into one view the results of the present paper, both as regards the numerical facts and the length of time over which the investigation extends; and it places these results in juxtaposition with the conclusions arrived at by Mr. Leatham for the whole portion of the same period to which his researches extended.



TABLE XVI.

*Total Amount of Bills, Inland and Foreign, in circulation at one time for the periods embraced in the present Inquiry and in Mr. Leatham's Tables.*

Present Inquiry.				By Mr. Leatham's Tables.					
Years.	Great Britain. — Inland Bills.	Add one-sixth for Foreign Bills.	Total of Bills in Circulation at one time in Great Britain.	Great Britain. — Inland Bills.	Ireland. — Inland Bills.	Ban- ker's Drafts.	Total (Inland) of Great Britain, Ireland, & Banker's Drafts.	Add one-sixth for Foreign Bills.	Total of Bills in Circulation at one time in United Kingdom.
	£	£	£	£	£	£	£	£	£
1828	80,908	13,485	94,393	....	....	....	....	....	....
1829	78,946	13,156	92,102	....	....	....	....	....	....
1830	74,034	12,339	86,373	....	....	....	....	....	....
1831	81,490	13,582	95,072	....	....	....	....	....	....
			91,985						
1832	72,215	12,036	84,351	....	....	....	....	....	89,038
1833	80,589	11,765	92,254	....	....	....	....	....	95,914
1834	78,549	13,091	91,640	....	....	....	....	....	94,788
1835	83,942	13,974	97,916	73,693	12,777	401	86,871	14,480	101,350
			91,540						
1836	105,562	17,592	123,154	88,822	14,788	519	104,129	17,338	121,485
1837	95,035	15,840	110,875	83,317	13,544	656	97,517	16,253	113,771
1838	97,722	16,287	114,009	85,486	13,589	674	99,749	16,625	116,376
			116,016						
1839	113,119	18,853	131,972	98,550	13,903	794	113,247	18,875	132,123
1840	116,319	19,387	136,706	....	....	....	....	....	....
1841	107,903	17,984	125,887	....	....	....	....	....	....
1842	92,751	15,458	108,209	....	....	....	....	....	....
			125,693						
1843	87,659	14,609	102,268	....	....	....	....	....	....
1844	91,004	15,167	106,171	....	....	....	....	....	....
1845	106,030	17,671	123,701	....	....	....	....	....	....
1846	112,532	18,755	131,287	....	....	....	....	....	....
			120,857						
1847	113,161	18,860	132,021	....	....	....	....	....	....
			110,018						

The three 0's (000) at the unit end are omitted.—See Note to Table XI., page 176.

*[The remainder of this Paper will appear in the next number of the Journal, to be published in August.]*

## MISCELLANEOUS.

*Twentieth Meeting of the British Association for the Advancement of Science, at Edinburgh, July 31st—August 6th. Section F. Statistics.*

The following were its Officers and Committee:—

*President.*—Dr. J. Lee.

*Vice-Presidents.*—Rev. Dr. Gordon, Dr. H. Marshall, Professor W. P. Alison, G. R. Porter, Esq.

*Secretaries.*—Prof. Hancock, Dr. J. Stark, J. Fletcher, Esq.

*Committee.*—T. Tooke, Esq., Lieut.-Col. Sykes, W. T. Thomson, Esq., J. Finlaison, Esq., F. Sopwith, Esq., W. Jerdan, Esq., W. Felkin, Esq., Sir J. P. Boileau, Bart., F. G. P. Neison, Esq., G. S. Finlay, Esq., J. Shuttleworth, Esq., R. Christie, Esq., W. Chambers, Esq., Sir C. Lemon, Bart., M.P., J. Gibson, Esq., J. Orpen, Esq., J. Ball, Esq.

The following were the contributions submitted to the Section:—

1. On the Self-imposed Taxation of the Working Classes in the United Kingdom. By G. R. Porter, Esq., F.R.S.
2. On the Cost of obtaining Patents in Different Countries. By Prof. Hancock.
3. On the Causes of Distress at Skull and Skibbereen during the Famine in Ireland. By Prof. Hancock.
4. An Inquiry into the Question, whether under our existing Social System there is a tendency to the increase of Capital in the hands of those already possessing Riches. By G. R. Porter, Esq., F.R.S.
5. On the Relations of Crime and Ignorance in England and Wales. By J. Fletcher, Esq.
6. On the Civil and Criminal Justice of the North-West Provinces of British India. By Lieut.-Col. W. H. Sykes.
7. Remarks suggested by an examination of the Recent Statistics of the Cotton Manufacture in Great Britain. By G. R. Porter, Esq., F.R.S.
8. On the Geographical Distribution of Disease as indicating the Connexion between Natural Phenomena and Health and Longevity. By K. Johnston, Esq.
9. Account of the System of Croft Husbandry and the Reclamation of Waste Lands, chiefly by Spade Labour, adopted at Gairlock, in Ross-shire since 1846, and its results, as illustrating the condition under which the labour of Paupers and Criminals may safely be made productive. By Dr. Alison.
10. Some Observations with reference to an Investigation of the Fund established by Act of Parliament for a Provision for the Widows and Children of the Ministers of the Church of Scotland, and of the Principals and Masters of the Universities of Scotland from 1744 to 1849. By W. T. Thomson, Esq.
11. Some Statistics respecting the Sale of Encumbered Estates in Ireland. By Prof. Hancock.
12. Some Remarks on the City and Neighbourhood of Malaga, and on the Preparation of Raisins. By A. Milward, Esq.
13. On the Recent Progress of Glasgow in Population, Wealth, Commerce, and Manufactures. By Dr. J. Strang.
14. On the Prevalence and Mortality of Cholera in the Indian Armies. By Dr. C. Finch.

The next Meeting of the British Association will be held at Ipswich.



## PROCEEDINGS OF THE STATISTICAL SOCIETY OF LONDON.

*Fourth Ordinary Meeting. 17th February, 1851.*

Lieut.-Colonel W. H. Sykes, Vice-President, in the Chair.

The following Gentlemen were elected Fellows:—

C. Lowcock Webb, Esq. | William Weir, Esq. | A. Thomas Thomson, Esq.

Lieut.-Col. M. Tulloch read a Paper on the Statistics of Auckland, New Zealand, by A. S. Thomson, Esq., M.D.; and Mr. Fletcher brought before the notice of the Meeting an Abstract of the Official Returns presented to the Society by Earl Grey, completing the Statistics of New Munster and of the portion of the Islands not included in the above Paper.

*Fifth Ordinary Meeting. 17th March, 1851.*

The Right Honourable Lord Overstone, President, in the Chair.

The following Gentlemen were elected Fellows:—

Harry George Gordon, Esq. | William Neison, Esq. | John Bowman, Esq.

A Paper was read by Lieut.-Col. Sykes on the Mortality in the Army, European and Native, under the Madras Government, from 1842 to 1848.

*Sixth Ordinary Meeting. 14th April, 1851.*

The Right Honourable Lord Overstone, President, in the Chair.

James Startin, Esq., was elected a Fellow of the Society.

A Paper was read by Mr. R. Thompson Jopling on the Sanitary Statistics of the Metropolis.

### THE MARRIAGES, BIRTHS, AND DEATHS,

REGISTERED IN THE DIVISIONS, COUNTIES, AND DISTRICTS OF ENGLAND,

AS PUBLISHED BY AUTHORITY OF THE REGISTRAR-GENERAL.

THIS Return comprises the Births and Deaths registered by 2,189 registrars in all the districts of England during the Autumn quarter ending December 31st, 1850; and the Marriages in more than 12,000 churches or chapels, 2,869 registered places of worship unconnected with the Established Church, and 623 Superintendent Registrars' offices, in the quarter that ended September 30th, 1850. The return of marriages is not complete; but the defects are inconsiderable, and have been supplied from previous years.

In their general character the returns of the last quarter of 1850 are still highly favourable; and imply a happier condition of the population at the close, than at the commencement of the year. While fewer lives have been lost by epidemic diseases, the marriages and births have increased.

The marriages celebrated in the summer quarter ending September 30th were 37,496, or more by ten thousand than were registered in the summer quarter of 1842; and two thousand four hundred more than have been returned in the summer quarter of any previous years. Allowing for increase of population, the proportion of marriages is greater than it has been in the same season of any year since the Registration commenced. Except in the Eastern and South-Eastern Counties, the increase of marriages has been general in all the great divisions of the country. In London the increase has been considerable; in Berkshire, Buckinghamshire, Oxfordshire, Northamptonshire, and Bedfordshire, it has probably kept pace with the population; in Wiltshire, Dorsetshire, and Cornwall; in Gloucestershire, Shropshire, and Staffordshire, the increase has been still more marked; in Leicestershire, Nottinghamshire, Derbyshire, Cheshire, Lancashire, and the West Riding of Yorkshire, however, the greater part of the excess has arisen. Northumberland, Cum-

berland, and South Wales, exhibit nearly the same increase as the Midland Counties. Among the counties in which the marriages have decreased, or have not sensibly increased, may be named—Kent, Hampshire, Suffolk, Norfolk, Devonshire, Lincolnshire, the East and North Ridings of York, Westmorland, and North Wales. In the purely agricultural counties marriage then still went on slowly, but steadily; in all the iron and coal fields at but a slightly increasing rate; while in all the counties peopled by the workers in lace, silk, wool, and cotton, the number of marriages—of new families established—has increased at a rate of which there are few examples in the returns of the last hundred years. And the general result is an aggregate increase in the marriages of the whole country during the summer quarter of the year 1850.

The births in the quarter following, which ended on December 31st, 1850, were also the greatest number ever registered in the autumn quarter of any previous year. 146,268 children were born in the three months. The births are, in general, most numerous in the spring quarter, and were so in the spring of 1850; they have since greatly exceeded the numbers registered in previous years in all the divisions of the kingdom—whether agricultural or manufacturing—in counties ravaged by cholera, and in counties left unscathed by that plague.

The excess of births registered over deaths in the quarter is 54,245. The usual excess is forty thousand more births than deaths; the excess in the last quarter of 1845 was 50,000; in 1847, when influenza was epidemic, only 24,000; in 1849, when the cholera epidemic was rapidly declining, 38,000.

In the last quarter of the year 1850, 56,971 emigrants left the ports of the United Kingdom, at which there are Government emigration officers; 3,836 departed from Irish ports, 1,903 from Glasgow and Greenock, and 51,232 from three English ports; namely, 1,702 from Plymouth, 4,282 from London, and 45,248 from Liverpool. During the whole of the year 1850 the births were 593,567, the deaths 369,679, and consequently the excess of births over deaths was 223,888 in England: the same year 280,843 emigrants sailed from the shores of the United Kingdom,—214,606 (many of them of Irish birth) from England; 15,154 from Scotland, and 51,083 from Ireland.

That the health of the country is in a state not so unsatisfactory as it has been, is evident from the reduced mortality. 92,023 deaths were registered; and allowing for the probable increase of population, the rate of mortality is lower than it has been in any of the last quarters of the years 1839-50 except 1845. The rate has been such that 1 in 197 of the population died in the quarter. The chances were 196 to 1, in this quarter, that a person would live through the three months; the average chance of living through the three months in England is 184 to 1.

London has suffered less than usual from zymotic diseases; and the deaths from all causes has been 12,544. Of this number 1,946 took place in public institutions; namely, 114 in the military hospitals and asylums, 1,070 in workhouses, 636 in hospitals, exclusive of 9 deaths in hospitals for foreigners—108 in lunatic asylums, and 9 in prisons, so that 1 in 12 who died in London ended his days in workhouses, 1 in 20 in hospitals, 1 in 115 in lunatic asylums, and 1 in 1,381 in prisons.

In every division of England the mortality has declined, and been lower than in the corresponding quarters of 1846, 1847, 1849. Lancashire and Cheshire present the greatest fluctuations.

*Marriages Registered in the Quarters ending September 30th, 1846-50; Births and Deaths Registered in the Quarters ending December 31st, 1846-50, in the Divisions, Counties, and Districts of England.*

Population.	Marriages.		Births.		Deaths.	
	Registered in the Quarter ending the last Day of					
	September,		December,		December,	
1831..... 13,896,797	1846..... 35,070	1846..... 139,349	1846..... 108,937			
	1847..... 32,439	1847..... 127,267	1847..... 103,479			
1841..... 15,914,148	1848..... 32,995	1848..... 133,204	1848..... 92,436			
	1849..... 33,789	1849..... 135,481	1849..... 97,778			
Military 29,846	1850..... 37,496	1850..... 146,268	1850..... 92,023			



## MORTALITY OF THE METROPOLIS.

Table of the Mortality in the Metropolis, showing the Number of Deaths from all Causes, in the Quarters ending December of the Four Years, 1847-48-49-50.

CAUSES OF DEATH.	Quarters ending Dec.*				CAUSES OF DEATH.	Quarters ending Dec.*			
	1847.	1848.	1849.	1850.		1847.	1848.	1849.	1850.
ALL CAUSES.....	19,605	14,725	12,877	12,544	III. Scrofula.....	84	92	83	76
SPECIFIED CAUSES.....	19,571	14,679	12,818	12,143	Tabes Mesenterica..	265	174	165	183
I. Zymotic Diseases....	5,825	5,137	3,227	2,706	Phthisis or Con- } sumption..... }	1,873	1,450	1,473	1,455
SPORADIC DISEASES.					Hydrocephalus....	408	342	314	298
II. Dropsy, Cancer, and } other Diseases of } uncertain or va- } riable Seat..... }	629	605	593	564	IV. Cephalitis.....	154	115	120	122
III. Tubercular Diseases..	2,630	2,058	2,035	2,012	Apoplexy.....	349	336	324	332
IV. Diseases of the Brain, } Spinal Marrow, } Nerves, and Senses }	1,742	1,465	1,454	1,476	Paralysis.....	307	249	257	280
V. Diseases of the Heart } and Blood-Vessels }	573	479	466	525	Delirium Tremens..	45	34	29	38
VI. Diseases of the } Lungs and of the } other Organs of } Respiration..... }	4,144	2,064	2,133	2,262	Chorea.....	1	1	1	1
VII. Diseases of the Sto- } mach, Liver, and } other Organs of } Digestion..... }	964	765	703	734	Epilepsy.....	90	73	73	79
VIII. Diseases of the Kid- } neys, &c..... }	190	141	142	153	Tetanus.....	5	4	5	4
IX. Childbirth, Diseases } of the Uterus, &c. }	222	106	124	107	Insanity.....	26	24	26	24
X. Rheumatism, Dis- } eases of the Bones, } Joints, &c..... }	139	105	98	108	Convulsions.....	592	477	473	441
XI. Diseases of the Skin, } Cellular Tissue, &c }	24	17	25	20	Disease of Brain, &c.	173	152	146	155
XII. Malformations.....	52	56	39	47	V. Pericarditis.....	27	34	34	89
XIII. Premature Birth & } Debility..... }	336	292	293	340	Aneurism.....	24	16	20	21
XIV. Atrophy.....	390	288	339	269	Disease of Heart....	522	429	412	465
XV. Age.....	357	527	554	536	VI. Laryngitis.....	71	44	46	32
XVI. Sudden†.....	225	162	191	147	Bronchitis.....	1,642	765	805	922
XVII. Violence, Privation, } Cold, and Intem- } perance..... }	529	412	402	437	Pleurisy.....	76	36	24	31
					Pneumonia.....	1,743	963	989	946
					Asthma.....	428	146	174	216
					Disease of Lungs, &c	184	109	95	115
					VII. Teething.....	141	91	118	120
					Quinsey.....	34	20	24	24
					Gastritis.....	23	26	18	16
					Enteritis.....	135	96	82	91
					Peritonitis.....	86	62	47	48
					Ascites.....	36	28	33	25
					Ulceration (of In- } testines, &c.).. }	31	30	33	22
					Hernia.....	48	46	26	29
					Ileus.....	44	28	22	34
					Intussusception....	10	9	14	10
					Stricture of the In- } testinal Canal.. }	11	11	8	11
					Dis. of Stomach, &c.	98	86	78	65
					Disease of Pancreas	1	..	..	..
					Hepatitis.....	58	45	29	44
					Jaundice.....	30	36	33	36
					Disease of Liver....	177	147	133	155
					Disease of Spleen..	1	4	5	4
					VIII. Nephritis.....	7	2	6	10
					Nephria (or } Bright's Disease) }	..	40	21	35
					Ischuria.....	6	1	2	3
					Diabetes.....	8	13	10	17
					Stone.....	10	4	7	6
					Cystitis.....	9	6	13	6
					Stricture of Urethra	15	10	6	12
					Dis. of Kidneys, &c.	135	65	67	64
					IX. Paramenia.....	5	5	8	2
					Ovarian Dropsy....	9	8	14	9
					Childbirth, see Metria	170	63	60	62
					Dis. of Uterus, &c...	38	30	42	34
					X. Arthritis.....	5	3	1	1
					Rheumatism.....	65	69	56	61
					Disease of Joints, &c.	69	33	41	46
					XI. Carbuncle.....	5	4	7	3
					Phlegmon.....	8	5	5	4
					Disease of Skin, &c.	11	8	13	13
					XVII. Intemperance....	28	13	15	17
					Privation.....	12	14	8	9
					Want of Breast } Milk, see Privation & Atrophy }	..	35	37	51
					Neglect.....	..	..	..	2
					Cold, see Privation..	..	..	1	1
					Poison.....	..	24	20	22
					Burns and Scalds..	..	63	58	49
					Hanging, &c.....	..	22	41	54
					Drowning.....	489	68	47	59
					Fractures and Con- } tusions..... }	..	131	129	142
					Wounds.....	..	31	28	20
					Other Violence....	..	11	18	11
					Causes not specified	34	46	59	101

\* The deaths in the districts of Lewisham and Hampstead were included in the Metropolitan returns at the commencement of 1847, for the first time. Therefore the deaths for the previous year are not contained in the above table. In the quarter ending December, 1846, they were 188.

† Under the head of "sudden deaths," are classed not only deaths described as sudden, of which the cause was not been ascertained or stated; but also all deaths returned by the Coroner in vague terms, such as "found dead," "natural causes," &c., &c.

‡ In the years previous to 1848, "Worms" and "Infantile Fever" were classed together. The former, of very rare occurrence, is now placed to diseases of stomach, &c.





## REVENUE.

*Abstract of the Net Produce of the Revenue of Great Britain in the Years and Quarters ending 5th April, 1850 and 1851; showing the Increase or Decrease thereof.—(Continued from page 93.)*

Sources of Revenue.	Years ending 5th April.			
	1850.	1851.	Increase.	Decrease.
	£	£	£	£
Customs.....	18,535,263	18,730,562	195,299	....
Excise .....	12,792,713	13,125,024	332,311	....
Stamps .....	6,354,429	6,105,524	....	248,905
Taxes.....	4,332,979	4,350,731	17,752	....
Property Tax .....	5,466,248	5,403,379	....	62,869
Post Office.....	803,000	861,000	58,000	....
Crown Lands.....	160,000	160,000	....	....
Miscellaneous .....	198,410	152,566	....	45,844
Total Ordinary Revenue ....	48,643,042	48,888,786	603,362	357,618
Imprest and other Moneys .	656,855	651,453	....	5,402
Repayments of Advances....	553,349	759,126	205,777	....
Total Income.....	49,853,246	50,299,365	809,139	363,020
Deduct Decrease .....			363,020	
Increase on the Year .....			446,119	

Sources of Revenue.	Quarters ending 5th April.			
	1850.	1851.	Increase.	Decrease.
	£	£	£	£
Customs .....	4,432,584	4,548,266	115,682	....
Excise .....	1,859,473	1,980,536	121,063	....
Stamps .....	1,538,125	1,548,008	9,883	....
Taxes.....	177,231	167,784	....	9,447
Property Tax.....	2,069,608	2,089,950	20,342	....
Post Office.....	231,000	272,000	41,000	....
Crown Lands.....	40,000	40,000	....	....
Miscellaneous .....	47,960	21,974	....	25,986
Total Ordinary Revenue ....	10,395,981	10,668,518	307,970	35,433
Imprest and other Moneys	301,759	261,765	....	39,994
Repayments of Advances ....	91,400	141,908	50,508	....
Total Income.....	10,789,140	11,072,191	358,478	75,427
Deduct Decrease .....			75,427	
Increase on the Quarter .....			283,051	

*Consolidated Fund Operations.*—The total income brought to this account in the quarter ending 5th April, 1851, was 11,080,092*l.* The total charge upon it was 8,300,473*l.*, leaving a surplus of 2,779,619*l.*



## CORN.

*Average Prices of Corn per Imperial Quarter in England and Wales, during each Week of the First Quarter of 1851; together with the Average Prices for the whole Quarter.—(Continued from p. 94.)*

Returns received at the Corn Office, Board of Trade.		Wheat.		Barley.	Oats.	Rye.	Beans.	Peas.
		Weekly Average	Aggregate Average of Six Weeks' regulating Duty.	Weekly Average	Weekly Average	Weekly Average	Weekly Average	Weekly Average
Weeks ending, 1851.		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
January	4 .....	38 3	39 5	23 4	16 11	27 5	27 3	28 1
	11 .....	38 1	39 1	22 9	17 2	22 1	26 9	27 0
	18 .....	38 0	38 9	22 8	16 9	24 8	26 7	26 11
	25 .....	38 0	38 5	22 7	16 7	23 2	26 4	27 5
February	1 .....	37 10	38 2	22 9	16 7	22 7	25 11	26 6
	8 .....	38 1	38 0	22 10	16 9	23 11	25 10	26 0
	15 .....	37 8	37 11	22 11	16 2	23 10	25 5	26 10
	22 .....	37 2	37 9	22 10	15 11	23 8	25 4	27 1
March	1 .....	36 11	37 7	22 7	16 0	24 4	25 3	25 8
	8 .....	36 9	37 5	22 7	16 2	24 4	25 7	26 7
	15 .....	37 2	37 3	23 1	16 6	23 3	25 6	26 4
	22 .....	37 5	37 2	23 3	16 9	22 8	25 8	25 9
	29 .....	38 1	37 3	23 7	16 7	28 5	25 7	24 6
Average for the Quarter .....		37 7	..	22 10	16 6	24 2	25 11	26 5

*Foreign and Colonial Wheat and Wheat-Flour imported in each of the Months ending 5th January, 5th February, and 5th March, 1851; the Quantities Entered for Home Consumption during the same Months; and the Quantities remaining in Warehouse at the close of them.—(Continued from p. 94.)*

[From the "London Gazette."]

## WHEAT.

Months ending.	Imported.			Quantities entered for Home Consumption.			In Bond at the Month's end.		
	Foreign.	Colonial.	Total.	Foreign.	Colonial.	Total.	Foreign.	Colonial.	Total.
1851.	qrs.	qrs.	qrs.	qrs.	qrs.	qrs.	qrs.	qrs.	qrs.
5th Jan.	323,628	931	324,559	323,628	931	324,559	10,693	9	10,702
5th Feb.	327,317	1,123	328,440	327,360	1,123	328,483	10,650	9	10,659
5th Mar.	282,612	176	282,788	283,240	176	283,416	10,022	9	10,031

## WHEAT-FLOUR.

Months ending.	Imported.			Quantities entered for Home Consumption.			In Bond at the Month's end.		
	Foreign.	Colonial.	Total.	Foreign.	Colonial.	Total.	Foreign.	Colonial.	Total.
1851.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.
5th Jan.	528,795	42,784	571,579	528,795	42,784	571,579	2,939	11	2,950
5th Feb.	411,520	459	411,979	411,520	459	411,979	2,939	11	2,950
5th Mar.	446,416	388	446,804	446,416	388	446,804	2,939	11	2,950



Stocks and Shares.	Amount of Share.			Amount Paid.			Price on the 1st of			Highest Price during the Months of			Lowest Price during the Months of		
	February.			March.			February.			Feb.			Feb.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Consols .....	...	...	...	...	...	...	96½	58s. to	96½	96½	58s. to	96½	95½	46s. to	96½
Exchequer Bills .....	...	...	...	...	...	...	61s. Pm	50s. Pm	52s. to	56s. Pm	61s. Pm	57s. Pm	49s. Pm	50s. Pm	50s. Pm
RAILWAYS.—															
Brighton .....	Stock			Stock			95½ex d.		95	99		98	94½		94½
Caledonian .....	50	0	0	50	0	0	10½		13½	17½		15½	12		12½
Eastern Counties .....	20	0	0	20	0	0	6½		7½	8½		7½	6½		7½
Great Northern .....	25	0	0	25	0	0	18½		17½	19		18½	17½		17½
Great Western .....	100	0	0	100	0	0	89½		87½	93		89½	88		85
London and North-Western .....	Stock			Stock			130½		127½	135		130½	129		125½
Midland .....	Stock			Stock			62ex d.		60½	63		65	54½		58½
North Staffordshire .....	20	0	0	20	0	0	10½		10½	11½		11½	10½		10½
South-Eastern .....	33	2	4	33	2	4	24½		26½	29		28½	24½		26
South-Western .....	Stock			Stock			88½		87½	92½		90½	86½		85½
York, Newcastle, & Berwick .....	Stock			Stock			20½		21½	21½		22½	20½		21
York and North Midland .....	50	0	0	50	0	0	24½		24½ex d.	30½		28½	23½		25½
—															
Boulogne and Amiens .....	20	0	0	20	0	0	9½		10	11½		10½	8½		9½
Northern of France .....	20	0	0	20	0	0	15½		15½	16½		15½	14½		14½
East Indian .....	20	0	0	20	0	0	12½		15½	15½		15½	12		15½

Average Price of Meat as sold in Smithfield Market in the Months ending January, February, and March, 1851.—(Continued from p. 95.)

[From Returns sent to the Board of Trade.]

Description.			Jan.	Feb.	Mar.	Description.			Jan.	Feb.	Mar.	Description.			Jan.	Feb.	Mar.
Inferior Beasts .....	s.	d.	2	8		s.	d.		3	6		s.	d.		3	4	
2nd class .....	3	0	3	0	3	0	3	8	3	8	4	0	3	8	3	4	3
3rd class (Large Prime)...	3	4	3	4	3	4	3	10	3	10	4	0	3	10	3	4	3
4th class (Scots) .....	3	6	3	6	3	6	4	2	4	2	4	4	4	4	3	10	3
								...				5	9				

N.B.—Price of Meat at the rate of 8 lbs. Avoirdupois to the stone, sinking the offal.

## CURRENCY.

## BANK OF ENGLAND.

*An Account, pursuant to the Act of the 7th and 8th Victoria, c. 32, for the Weeks ending on Saturday, the 4th January, the 8th February, and the 1st and 29th March, 1851.—(Continued from p. 96.)*

[From the "London Gazette."]

## ISSUE DEPARTMENT.

	Weeks ending,			
	4th Jan., 1851.	8th Feb., 1851.	1st March, 1851.	29th March, 1851.
	£	£	£	£
Notes issued .....	28,273,230	27,638,220	27,772,240	27,556,410
Government Debt ....	11,015,100	11,015,100	11,015,100	11,015,100
Other Securities .....	2,984,900	2,984,900	2,984,900	2,984,900
Gold Coin and Bullion..	14,221,563	13,608,553	13,738,865	13,523,035
Silver Bullion .....	51,667	29,667	33,375	33,375
Total .....	28,273,230	27,638,220	27,772,240	27,556,410

## BANKING DEPARTMENT.

Proprietors' Capital....	14,553,000	14,553,000	14,553,000	14,553,000
Rest .....	3,128,010	3,239,356	3,610,954	3,622,726
Public Deposits .....	10,796,555	6,723,916	7,794,344	8,999,881
Other Deposits.....	9,480,319	9,360,278	9,521,505	9,266,234
Seven Day and other Bills	1,249,591	1,206,472	1,053,596	1,051,416
Total .....	39,207,475	35,083,022	36,533,399	37,493,257
Government Securi- ties, including Dead Weight Annuities.. }	14,232,319	14,145,696	14,145,696	14,145,250
Other Securities .....	15,181,698	11,834,247	13,174,857	14,063,963
Notes .....	9,236,570	8,463,135	8,536,665	8,594,275
Gold and Silver Coin ..	556,888	639,944	676,181	689,769
Total .....	39,207,475	35,083,022	36,533,399	37,493,257

## COUNTRY BANKS.

*Average Aggregate Amount of Promissory Notes of Country Banks, which have been in Circulation in the United Kingdom, distinguishing the several Banks, or Classes of Banks by which issued in each part of the Kingdom, during the months ending 25th January, 22nd February, and 22nd March, 1851.—(Continued from p. 96.)*

Banks.	25th January, 1851.	22nd February, 1851.	22nd March, 1851.
England—Private Banks .....	3,573,320	3,473,939	3,386,975
Joint Stock Banks .....	2,728,640	2,689,104	2,685,756
Scotland—Chartered, Private, and Joint Stock Banks..... }	3,252,485	3,138,226	3,033,235
Ireland—Bank of Ireland, Private and Joint Stock Banks .....	4,782,651	4,741,051	4,620,912
Total.....	14,337,096	14,042,320	13,726,878



QUARTERLY JOURNAL  
OF THE  
STATISTICAL SOCIETY OF LONDON.

---

SEPTEMBER, 1851.

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*On the Accumulation of Capital by the Different Classes of Society.*  
By G. R. PORTER, Esq., F.R.S.

[Read before the Statistical Section of the British Association for the Advancement of Science, August, 1850.]

AMONG the advantages attendant upon the collection and registration of statistical records, perhaps the most important is found in the assistance which they afford for the confirmation or correction of opinions, upon matters that from time to time agitate the public mind, and thus are apt to influence the progress of legislation and to affect the condition of society.

Among such opinions, there is one which is confidently held by a great number of persons—it might perhaps be said by a majority of those whose word can have any authority upon such a subject—namely, that there is and has for some time been a constant tendency under the social institutions which generally prevail in this and in the other more advanced countries of Europe, for wealth to be accumulated in a fewer number of hands, or, to use a common mode of expression, that the rich are continually becoming richer, and the poor poorer, and that this is especially the case in England. It must be needless to add that such a belief, if generally held, is calculated to create among the people a wide-spread discontent with the order of things under which that result is experienced; and that every benevolent mind which may have arrived at such a conclusion, must be anxious to find a remedy for it. The bare idea of such a condition of society could not be other than distressing, and if there were any true grounds for believing in its existence, we could not too early, nor too strenuously, set ourselves to reform our institutions, and to bring them more into agreement with the better feelings of our nature. This subject having recently been forced upon my consideration in a manner which indicated the existence of a conviction to the effect already stated, on the part of several men whose opinions are deserving of the highest respect,

I have been led to quit in regard to it the region of mere opinion, and to enter upon the examination of facts with a view to the confirmation of such fears, or to their rejection, if happily I should find myself justified in adopting the latter result.

The sources of information bearing upon this interesting social question which are open to us are not many. To avoid, as far as possible, all question concerning their accuracy, I shall confine myself in this examination to documents stamped with official authority.

The statement which I shall first bring forward will serve only to show that there has been, and continues to be, a power of saving on the part of the working classes in this country. It does not pretend to afford any comparison between the accumulations of different classes.

The number of depositors and the amount of deposits in savings' banks in the different divisions of the United Kingdom, on the 20th November, 1830, were—

England.....	367,812 depositors	.....	£12,287,606 deposits.
Wales.....	10,204	„	314,903 „
Ireland .....	34,201	„	905,056 „
<hr/>		<hr/>	
Total.....	412,217	„	£13,507,565 „

On the 20th November, 1848, the number and amount of depositors and deposits were—

England.....	899,606 depositors	.....	£24,985,730 deposits.
Wales .....	21,195	„	692,495 „
Ireland .....	50,024	„	1,355,801 „
<hr/>		<hr/>	
Total.....	970,825	„	£27,034,026 „
Scotland .....	86,056	„	1,080,110 „
<hr/>		<hr/>	
	1,056,881	„	£28,114,136 „

showing an increase during 18 years in England, Wales, and Ireland, of 558,608 depositors, and 13,526,461*l.* deposits.

A closer examination of the accounts of savings' banks will show that the deposits in England, Wales, and Ireland, proportioned to the population, amounted—

In 1831, to 12 <i>s.</i> 8 <i>d.</i> per head.		In 1841, to 19 <i>s.</i> 10 <i>d.</i> per head.
1836, to 16 <i>s.</i> 4 <i>d.</i> „		1848, to 20 <i>s.</i> 11 <i>d.</i> „

In Scotland the deposits were—

In 1836.....	7 <i>d.</i> per head.
1841.....	4 <i>s.</i> 8 <i>d.</i> „
1848.....	7 <i>s.</i> 5 <i>d.</i> „

The largest amount of these savings occurred in 1846, when they reached—

In England .....	£26,759,817
Wales .....	674,657
Scotland .....	1,383,866
Ireland .....	2,924,910
<hr/>	
	£31,743,250



being equal to 24s. per head on the population of England, Wales, and Ireland, and 10s. 1*d.* per head in that of Scotland. The diminution in 1847 and 1848 is clearly the result of the high prices of provisions, and consequent falling-off in wages, caused by the potato rot and its attendant circumstances; and these are too recent, and too strongly impressed on the memories of all who hear me, to render it necessary to offer any further explanation concerning them.

The comparative smallness of the deposits in Scotland arises from two causes. First, the system of allowing interest upon very small sums deposited in private and joint-stock banks; and, secondly, the more recent connection of savings' banks with the government in that division of the kingdom. There is no reason for supposing that the labouring classes of Scotland are less saving than those of England or Ireland; and presuming that the disposition to save is naturally as great in each part of the kingdom, the workmen of Scotland have, until very recently, had a much stronger incentive than their English fellow subjects to set aside a part of their earnings, because of the absence of any legal provision for the wants of their old age, and against the occurrence of sickness or accident.

The next test to which I would direct attention varies essentially from that afforded by the progress of savings' banks; inasmuch as it excludes all evidence of present saving or accumulation, while it offers a strictly comparative view of such saving as between different classes of the community.

The accounts furnished to parliament of the number of persons entitled to dividends upon portions of the public debt, divide the fund-holders into ten classes, according to the amount to which they are so entitled. The following figures exhibit the numbers in each class as they stood on the 5th April and 5th July of the years 1831 and 1848 respectively.

		1831.			1848.		
		April.	July.	Total.	April.	July.	Total.
Not exceeding	£5	29,414	58,756	88,170	53,985	42,430	96,415
"	" 10	14,962	29,828	44,790	25,814	19,123	44,937
"	" 50	33,816	64,504	98,320	54,500	41,525	96,025
"	" 100	8,961	16,733	25,694	13,069	11,393	24,462
"	" 200	5,104	9,668	14,772	6,911	6,971	13,882
"	" 300	1,554	2,973	4,527	1,918	2,114	4,032
"	" 500	964	1,926	2,890	1,189	1,458	2,647
"	" 1000	445	953	1,398	540	682	1,222
"	" 2000	134	278	412	155	173	328
Exceeding	2000	66	106	172	97	80	177
		95,420	185,725	281,145	158,178	125,949	284,127

It will be seen that there has been a very large addition between 1831 and 1848 to the number of persons receiving under 5*l.* at each payment of dividends, and a small increase upon the number receiving between 5*l.* and 10*l.*, while, with the exceptions of the largest holders—those whose dividends exceed 2,000*l.* at each payment, and of whom

there has been an increase of 5,—every other class has experienced a considerable decrease in its numbers. Thus :—

Persons receiving under £5 increase 8,245 or 9·35 per cent.			
„	£5 and under 10	„	147 0·33 „
„	10 „ 50	decrease	2,295 2·33 „
„	50 „ 100	„	1,232 4·79 „
„	100 „ 200	„	890 6·02 „
„	200 „ 300	„	495 10·93 „
„	300 „ 500	„	243 8·41 „
„	500 „ 1000	„	176 12·59 „
„	1000 „ 2000	„	84 20·38 „
„	above 2000	increase	5 2·90 „

As respects this last class, those receiving above 2000*l.* at each payment of dividends, it must be borne in mind that it includes Insurance offices, which generally have large investments in the public funds, and whose accumulations of this kind are almost certain to increase from year to year, a fact which makes it somewhat surprising that the number has not been augmented in a greater degree than is shown by the tables. A diminution of more than 8 per cent, in the numbers receiving between 300*l.* and 500*l.*; of 12½ per cent of those receiving between 500*l.* and 1000*l.*, and of more than 20 per cent among holders of stock, yielding dividends between 1000*l.* and 2000*l.*, would seem conclusively to show, that at least as respects this mode of disposing of accumulations, there is not any reason to believe that the already rich are acquiring greater wealth at the expense of the rest of the community.

The branch of this inquiry to which my attention was next directed, was that which is elucidated by returns showing the sums assessed to the Income-tax in respect of incomes derived from trades and professions, in 1812, compared with the like returns in 1848, excluding from the former period the incomes below 150*l.*, which under the existing law are allowed to pass untaxed.

The total amount thus assessed, after deducting exemptions, was—in 1812, 21,247,621*l.*, while in 1848, the amount was 56,990,223*l.*, showing an increase in 36 years, of 35,742,602*l.*, or 168·21 per cent, being at the rate of 4·67 per cent yearly, an increase very nearly three-fold greater than the increase during the same period of the population of that part of the United Kingdom which is subject to the Income-tax.

The object now in view is not that of showing the increased wealth of the country at large, but in what degree such increase has been experienced among different classes of the people, or occasion might be taken to express the satisfaction which every Englishman must feel at this unmistakeable evidence of the material well-being and continued progress of our country, which feeling is shown by the results to which I thus venture upon calling attention, to be unalloyed by any well-founded fears, concerning the oft-alleged deteriorated condition of the bulk of the people.

The returns examined give the sums assessed to Income-tax in various classes, and for the purposes of the present examination, I have distinguished the incomes thus given :—



Between £150 and £500 | Between £1000 and £2000  
,, £500 ,, £1000 | ,, £2000 ,, £5000  
and above £5000.

In the first of these classes, viz., between 150*l.* and 500*l.* per annum, I find a positive increase in 1848, of 13,724,949*l.* upon the incomes assessed in 1812. In the next class, embracing incomes between 500*l.* and 1000*l.* per annum, the increase since 1812, has been 5,100,540*l.* On incomes between 1000*l.* and 2000*l.*, the increase has amounted to 4,078,095*l.* In the next class, including incomes between 2000*l.* and 5000*l.*, there is an increase of 4,059,743*l.*, while in the highest class, which includes all incomes above 5000*l.* per annum, the increase is found to be 8,779,275*l.* Comparing the lowest with the highest of these classes, it is shown that the increase has been greater in the lowest class by 4,945,674*l.* or 56.33 per cent.

The returns relating to the property-tax which was repealed in 1815, do not show the number of persons assessed in each class, as is the case with the recent returns, and as, under the influence of a childish feeling of exultation, the House of Commons was led to follow up the vote which repealed the tax in 1815, by another vote which directed the destruction of all the documents connected therewith, it is not possible now to make any precise comparison between the two periods in this respect.

By means of the information given in the return for 1848, we are able to ascertain the average amount of the incomes, during that year, of individuals in each of the foregoing classes, and assuming that the average in each of the same classes, was the same in 1812 as now, we may arrive at a reasonable approximation to the actual number then assessed, and to the increase since made to the number in each class.

Incomes.			Number in 1812.	Number in 1848.	Increase.
Between	£ 150 and	£ 500	30,732	91,101	60,369
„	500 „	1,000	5,334	13,287	7,953
„	1,000 „	2,000	2,110	5,234	3,124
„	2,000 „	5,000	1,180	2,586	1,406
„	5,000 „	10,000	....	788	....
„	10,000 „	50,000	409	371	772
	50,000 and upwards		....	22	....
			39,765	113,389	73,624

The only remaining documents bearing an official character, to which recourse can be had in order to throw light upon this subject, are the returns made from the office of the Commissioners for Inland Revenue, showing the sums upon which probate duty has been paid in respect of personal property left by persons deceased. Considerable reliance may be placed on the accuracy of these returns which, at least in England, include all cases where the property left is of any value, which would make it worth the while of survivors to question the propriety of its distribution. The accounts will, at all events, be

strictly comparative between one period and another, since any possible motives which might lead to the evasion of the probate duty will have been equally operative at all times. The growth of the capital thus subject to probate duty is truly remarkable. Stated at intervals of five years beginning with the present century, it has been as follows:—

1801.....	£3,541,931	1826.....	£31,024,593
1806.....	7,039,031	1831.....	39,532,397
1811.....	14,757,420	1836.....	41,768,806
1816.....	24,073,456	1841.....	41,476,521
1821.....	33,023,060	1848.....	44,348,721

After making a liberal allowance for evasion of the tax in the early years following its first imposition in 1797, and for the collection of arrears in 1848, the increase during less than half a century, of property thus brought under the operation of the probate duty is such as must strike us with astonishment. Our present business, however, is with the comparative amount of estates in different classes, for which purpose a calculation has been made of their value in 1833, the earliest year for which the returns enable us to make the same, and in 1848.

The amount assessed on estates amounting to various sums up to £1,500 was—

In 1833.....	£4,692,825
1848.....	5,423,200

Increase..... £730,375, or 15·56 per cent.

On estates between £1,500 and £5,000 the amounts were—

In 1833.....	£6,821,750
1848.....	7,450,000

Increase..... £628,250, or 9·21 per cent.

Between £5,000 and £10,000, the difference has been—

In 1833.....	£5,155,500
1848.....	6,000,000

Increase..... £844,500, or 16·38 per cent.

From £10,000 to £15,000, the amounts were—

In 1833.....	£4,258,000
1848.....	4,529,000

Increase..... £271,000, or 6·36 per cent.

The estates between £15,000 and £30,000 were estimated—

In 1833, at .....	£5,760,500
1848.....	6,822,000

Increase..... £1,061,500, or 18·42 per cent.

Above £30,000, the valuations were—

In 1833 .....	£10,637,500
1848 .....	10,757,500

Increase ..... £120,000, or 1·13 per cent.



It may reasonably be thought, that the calculation of the value of estates in the various classes is liable to disturbance from year to year, and especially as respects the higher amounts, the number of persons dying in any one year and leaving very large fortunes, being necessarily limited. It would have called for a laborious calculation, and have occupied a longer time than I could well afford, to go through the examination of the official returns year by year, from 1833, to the present time. That such an examination would not, however, much (if at all) disturb the result already shown, may be safely inferred from the fact, that the amount of probate duty received during that period upon all wills where the property has amounted to 30,000*l.* and upwards, has not increased, but on the contrary has rather diminished. Dividing the 16 years from 1833 to 1848, into equal periods of 4 years each, and ascertaining the average duty paid on estates of 30,000*l.* and upwards in each year of such division, it appears, that the sum received in the 4 years

1833 to 1836, averaged £238,306		1841 to 1844, averaged £229,162
1837 „ 1840, „ 230,388		1845 to 1848, „ 223,962

while the average receipts from the probate duty generally have been steadily and progressively advancing with the increasing wealth of the country.

Having thus examined all the official returns which afford means for arriving at the truth upon this really important subject, we observe the most perfect agreement in their results; and it cannot but be satisfactory to every one to find, that the fears entertained and expressed by many, as to the probable disappearance of the middle classes from among us, are unfounded; that it is far from being true that the rich are growing richer and the poor are becoming poorer; but that, on the contrary, those who occupy a middle station, (perhaps the safest station as regards personal respectability, and that which offers the surest guarantee for the progress and continued well-being of the country,) are progressively increasing in number and in the proportion which they bear relatively to the population of the kingdom.

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*On the Rate of Mortality among Persons of Intemperate Habits.*  
By F. G. P. NEISON, Esq., F.L.S., &c.

[Read before the Statistical Society of London, 16th June, 1851.]

In the present contribution, it is proposed to investigate the rate of mortality which prevails among persons addicted to the immoderate use of intoxicating drinks. Assurance companies have generally declined to assure such lives, from the supposed greater mortality to which they were believed to be subject; but no attempt has been previously made to test this opinion by properly-authenticated facts; and it is therefore hoped that the data now brought under consideration may not be without interest. The results are calculated to throw considerable light on a question not only curious in itself, but evidently of much importance to life offices, as well as to the public generally.

The remarkable efforts which have been recently made to reform the drinking usages of the community, will be a sufficient apology for bringing under the attention of this Society statistical evidences on a subject so deeply affecting the social, moral, and religious condition of the people.

It may be well to remark, that, in collecting the present data, the intention was to include in the observations only such persons as were decidedly addicted to drinking habits, and it was not intended to bring within observation mere occasional drinkers, or what is usually termed generous or "free livers." The reasons for this distinction will hereafter appear. It may also be stated, that the primary reason for collecting the facts was to apply the results to life assurance operations, and it was consequently important to include only well-marked cases of intemperance. Examination will show that, for social and moral purposes, this would also have been the only satisfactory course to have followed; but, that the plan adopted for obtaining the present collection of facts may be the better understood, the following circular and schedule are given:—

Sir,

Medical, Invalid, and General Life Office,  
25, Pall Mall, London.

I beg to inclose you forms for the collection of cases of the mortality of persons of intemperate habits.

Many difficulties have been experienced in our attempts to procure satisfactory data on the value of life among persons addicted to the excessive use of intoxicating drinks, and therefore the present method has been resorted to, in order to increase our information on the subject. May I beg to solicit your assistance in filling up any portion of the inclosed schedules; and should your knowledge of cases be so extensive as to require more than the number sent, others will be forwarded on hearing from you to that effect. If you could also suggest any gentleman who would be useful to us in giving the information required, I would put myself in communication with him on the subject.

Hoping I may calculate on your co-operation, I beg to direct your attention to the subjoined hints on filling up the schedules.

I am, Sir,

Your most obedient Servant,  
F. G. P. NEISON, Actuary.

N.B. No case should be entered in the schedule unless the person alluded to was decidedly addicted to drinking habits during a considerable period of life.

The peculiar feature of the intemperance, whether the favourite beverage was



fermented or distilled liquors, should be stated in the column “Remarks,” and also whether the intemperance continued to the time of death.

If the correct age at death be known, it will be entered as such; if not, the age must be guessed or approximated to by whoever fills up the schedule, or by the *mean age* of that guessed at by two or three persons who may have known the individual in question.

The name in full, or at least the initials of the person in question, and also the place of death, should be entered in the columns set apart for that purpose. This will be necessary, in order to correct double entries which may be made by two different persons.

In the column of the “Cause of Death,” insert the post-mortem examination, if practicable, such as diseases of the heart, liver, lungs, kidneys, &c., &c. (*and perhaps terminating in dropsy, &c., &c.*)

Please to return the schedules as soon as you have entered all the cases which have come under your observation.

*It is not expected that the schedules can be always filled from registers or notes kept for the purpose; but generally from a distinct recollection of the cases; and an approximation to the truth is therefore all that is calculated on being obtained.*

INTEMPERANCE.—SCHEDULE.

Description.			Death.			Disease or Cause of Death.	Duration of Intemperance.	Remarks on the Peculiar Features of the Intemperate Habits; whether they existed up to the period of Death, and any other Observations necessary.
Name or other Distinction.	Sex.	Profession or Occupation.	Date of.	Place of.	Age at.			

It is obvious that it would be very difficult, if not impossible, to give a definition of what constitutes intemperate habits that would be satisfactory to every one; almost every person would have a standard of his own by which to determine the fact of temperance or intemperance, and therefore in the preceding circular no attempt has been made to define the particular character of habits on which information is sought; all that has been urged on the attention of those filling up the schedules is to give only well-marked cases, and to include only persons who were decidedly addicted to drinking habits. The consequence of following this course is, that the objections which might be urged against the adoption of any individual or peculiar test are avoided, for, by leaving it to each contributor of data to determine for himself what constitutes decidedly intemperate habits, the whole data taken collectively, from all the various contributors, will show very precisely the result of those habits which the public, by common consent, admit to be intemperate; so that, however any individual reasoner on the results may argue, and whatever peculiar construction he may choose to put upon them, it will be impossible to avoid the conclusion, that the data really relate to what the public generally regard as persons of intemperate habits. If the testimony of those more advanced in life is to be fairly trusted on this subject, it must be admitted, that during the last quarter of a century, the drinking practices of society have much altered, and what is now commonly regarded

as free living, would have some years since been looked upon as only moderation; so, in like manner, may it be hoped that the usages of society will continue to improve, and, at no distant date, the habits now considered not to exceed the bounds of moderation be altogether unknown in polite and refined society. It is, therefore, possible that what has hitherto been regarded as intemperate habits, may differ very widely from that which may be looked upon as intemperance some years hence.

From the information obtained on these schedules, the following facts and results are derived; and it may here be stated that defective schedules have been completely rejected. For the mode by which the data has been analysed, reference may be made to the paper on the "Mortality of Master Mariners," in vol. xiii. of the *Statistical Journal*. A similar plan has been followed in the present instance, and a careful perusal of that paper will make the method clearly understood, and show how the facts have been brought into the form of the following table:—

TABLE I.

Age.	Number coming under Observation at each Age.	Number remaining under Observation from Age preceding.	Total Number under Observation at each Age.	Died.	Half of Entered.	Number Exposed to Risk.	Age.	Number coming under Observation at each Age.	Number remaining under Observation from Age preceding.	Total Number under Observation at each Age.	Died.	Half of Entered.	Number Exposed to Risk.
14...	1	...	1	...	5	5	53...	...	105	105	5	...	105
15...	3	1	4	...	15	25	54...	1	100	101	3	5	1005
16...	...	4	4	...	...	4	55...	2	98	100	5	1	99
17...	7	4	11	1	35	75	56...	1	95	96	9	5	955
18...	5	10	15	...	25	125	57...	...	87	87	1	...	87
19...	4	15	19	...	2	17	58...	...	86	86	6	...	86
20...	29	19	48	...	145	335	59...	...	80	80	2	...	80
21...	7	48	55	1	35	515	60...	1	78	79	17	5	785
22...	15	54	69	1	75	615	61...	...	62	62	...	...	62
23...	6	68	74	3	3	71	62...	1	62	63	3	5	625
24...	14	71	85	4	7	78	63...	...	60	60	...	...	60
25...	19	81	100	7	95	905	64...	...	60	60	4	...	60
26...	11	93	104	5	55	985	65...	...	56	56	9	...	56
27...	14	99	113	7	7	106	66...	...	47	47	4	...	47
28...	20	106	126	3	10	116	67...	...	43	43	2	...	43
29...	9	123	132	2	45	1275	68...	...	41	41	6	...	41
30...	35	130	165	14	175	1485	69...	...	35	35	1	...	35
31...	9	151	160	4	45	1555	70...	...	34	34	11	...	34
32...	18	156	174	8	9	165	71...	...	23	23	2	...	23
33...	18	166	184	4	9	175	72...	...	21	21	2	...	21
34...	13	180	193	5	65	1865	73...	...	19	19	5	...	19
35...	15	188	203	11	75	1955	74...	...	14	14	4	...	14
36...	13	192	205	10	65	1985	75...	...	10	10	5	...	10
37...	5	195	200	5	25	1975	76...	...	5	5	...	...	5
38...	8	195	203	15	4	199	77...	...	5	5	...	...	5
39...	4	188	192	3	2	190	78...	...	5	5	1	...	5
40...	19	189	208	21	95	1985	79...	...	4	4	...	...	4
41...	5	187	192	2	25	1895	80...	...	4	4	1	...	4
42...	1	190	191	16	5	1905	81...	...	3	3	1	...	3
43...	5	175	180	9	25	1775	82...	...	2	2	...	...	2
44...	2	171	173	9	1	172	83...	...	2	2	...	...	2
45...	8	164	172	15	4	168	84...	...	2	2	1	...	2
46...	2	157	159	10	1	158	85...	...	1	1	...	...	1
47...	1	149	150	5	5	1495	86...	...	1	1	...	...	1
48...	5	145	150	7	25	1475	87...	...	1	1	...	...	1
49...	...	143	143	3	...	143	88...	...	1	1	...	...	1
50...	...	140	140	22	...	140	89...	...	1	1	...	...	1
51...	1	118	119	3	5	1185	90...	...	1	1	1	...	1
52...	...	116	116	11	...	116	91...	...	...	...	...	...	...



This table will be better understood by an examination of the following condensed abstract of it:—

## ABSTRACT A.

Ages.	Number Exposed to Risk.	Died.	Mortality per Cent.	Number Exposed to Risk.	Died.	Mortality per Cent.	England and Wales. Mortality per Cent.	Proportion of Intemperance Mortality to that of England and Wales.	Number which ought to have died according to England and Wales.
16—20	74·5	1	1·342	74·5	1	1·342	·730	1·8	·5
21—25	352·5	16	4·539	949·0	47	4·953	·974	5·1	9·2
26—30	596·5	31	5·197						
31—35	877·5	32	3·647	1861·0	86	4·620	1·110	4·2	20·7
36—40	983·5	54	5·491						
41—45	897·5	51	5·682	1635·5	98	5·992	1·452	4·1	23·7
46—50	738·0	47	6·369						
51—55	539·0	27	5·009	966·0	62	6·418	2·254	2·9	21·8
56—60	427·0	35	8·197						
61—65	300·5	16	5·324	500·5	40	7·992	4·259	1·9	21·3
66—70	200·0	24	12·000						
71—75	87·0	18	20·690	110·0	20	18·182	9·097	2·0	10·0
76—80	23·0	2	8·696						
81—85	10·0	2	20·000	15·0	3	20·000	19·904	1·0	3·0
86—90	5·0	1	20·000						
Total....	6111·5	357	5·841		357				110·2

These curious and remarkable results exhibit a rate of mortality for which the most careful observers will be generally unprepared. When intemperate lives are occasionally accepted by life offices, the rates of premium charged by them fall greatly short of what would be indicated by the preceding figures; and it is to be feared that a careful examination of their experience must show that the arbitrary mode by which such peculiar risks have been estimated has led them into unprofitable speculations. Throughout the whole range of the table, it will be seen that the rate of mortality is frightfully high, and unequalled by the results of any other series of observations made on

any class of the population of this country. Sanitary agitators have frequently excited alarm about the wholesale havoc in human life going on in the badly-conditioned districts of some of our large cities ; but no collection of facts ever brought under attention has shown so appalling a waste of life as is exhibited in the above results.

From the age of sixteen upwards, it will be seen that the rate of mortality exceeds that of the general population of England and Wales. In the 6111·5 years of life to which the observations extend, 357 deaths have taken place ; but if these lives had been subject to the same rate of mortality as the population generally, the number of deaths would have only been 110, showing a difference of 3·25 times. At the term of life 21-30, the mortality is upwards of five times that of the general community ; and in the succeeding twenty years of life, it is above four times greater, the difference, as might be expected, gradually becoming less and less. If there be anything, therefore, in the usages of society calculated to destroy life, the most powerful is certainly the inordinate use of strong drink.

From the preceding data the following tables have been constructed, in order to exhibit more clearly the rate at which persons of intemperate habits die, and consequently the average duration of their lives :—

TABLE II.  
*Interpolation of Mortality per Cent.*

Interval =  $\frac{1}{5}$ .

(1) = Original Quantities,  $\Delta_1$  and  $\Delta_2$  = 1st and 2nd differences.

$a = \cdot 2 \Delta_1$        $b = \cdot 04 \Delta_2$ .

Age.	(1).	$\Delta_1$	$\Delta_2$
16 ....	1·342	+ 3·611	— 3·944
		$a = + \cdot 7222$	$b = - \cdot 15776$
26 ....	4·953	— ·333	+ 1·705
		— ·0666	+ ·06820
36 ....	4·620	+ 1·372	— ·946
		+ ·2744	— ·03784
46 ....	5·992	·426	+ 1·148
		+ ·0852	+ ·04592
56 ....	6·418	1·574	+ 8·616
		+ ·3148	+ ·34464
66 ....	7·992	10·190	— 8·372
		+ 2·0380	— ·33488
76 ....	18·182	+ 1·818	....
		+ ·3636	....
86 ....	20·000	....	....



(1) = Interpolated Quantities, 1st  $\delta_1 = a - 2 b$ ,  $\delta_2 = b$ .

Age.	(1).	$\delta_1$	Age.	(1).	$\delta_1$
16.....	1·342		56.....	6·418	
18.....	2·37972	+ 1·03772	58.....	6·04352	−·37448
20.....	3·25968	·87996	60.....	6·01368	−·02984
22.....	3·98188	·72220	62.....	6·32848	+·31480
24.....	4·54632	·56444	64.....	6·98792	·65944
		+ ·40668			1·00408
26.....	4·953		66.....	7·992	
28.....	4·75000	−·20300	68.....	10·69976	2·70776
30.....	4·61520	·13480	70.....	13·07264	2·37288
32.....	4·54860	−·06660	72.....	15·11064	2·03800
34.....	4·55020	+·00160	74.....	16·811376	1·70312
		·06980			1·36824
36.....	4·620		76.....	18·182	
38.....	4·97008	·35008	78.....	19·21536	1·03336
40.....	5·28232	·31224	80.....	19·91384	·69848
42.....	5·55672	·27440	82.....	20·27744	·36360
44.....	5·79328	·23656	84.....	20·30616	+·02872
		+·19872			−·30616
46.....	5·992		86.....	20·000	....
48.....	5·98536	−·00664	....	....	....
50.....	6·02464	+·03928	....	....	....
52.....	6·10984	·08520	....	....	....
54.....	6·24096	·13112	....	....	....
		+·17704			

## Second Interpolation.

Interval =  $\frac{1}{2}$ .

$$d_1 = \frac{4}{10} \delta_1 - \frac{12}{100} \delta_2.$$

Age.	(1).	$d_1$	Age.	(1).	$d_1$	Age.	(1).	$d_1$
20....	3·260	+ ·308	47....	5·984	+ ·010	74....	16·814	·587
21....	3·568		48....	5·985		75....	17·401	
22....	3·982	·245	49....	5·995	+ ·029	76....	18·182	+ ·453
23....	4·127		50....	6·025		77....	18·635	
24....	4·546	+ ·182	51....	6·054	·469	78....	19·215	+ ·319
25....	4·726		52....	6·110		79....	19·534	
26....	4·953	- ·089	53....	6·579	+ ·065	80....	19·914	·186
27....	4·864		54....	6·241		81....	20·100	
28....	4·750	·062	55....	6·306	- ·191	82....	20·277	+ ·052
29....	4·688		56....	6·418		83....	20·322	
30....	4·615	·025	57....	6·227	- ·053	84....	20·306	- ·082
31....	4·590		58....	6·044		85....	20·224	
32....	4·549	- ·008	59....	5·991	+ ·085	86....	20·098	
33....	4·541		60....	6·014		87....	21·777	
34....	4·550	+ ·020	61....	6·099	·282	88....	23·095	
35....	4·570		62....	6·328		89....	24·687	
36....	4·620	·145	63....	6·610	·360	90....	26·277	
37....	4·765		64....	6·988		91....	27·877	
38....	4·970	·130	65....	7·348	1·123	92....	29·582	
39....	5·100		66....	7·992		93....	31·127	
40....	5·282	·114	67....	9·115	·989	94....	32·817	
41....	5·396		68....	10·700		95....	34·297	
42....	5·557	·099	69....	11·689	·855	96....	35·572	
43....	5·656		70....	13·073		97....	36·644	
44....	5·793	+ ·084	71....	13·928	·721	98....	37·482	
45....	5·877		72....	15·111		99....	38·066	
46....	5·992	- ·008	73....	15·832		100....	38·650	



TABLE III.

Age.	Mortality per Cent. = $a$ . $1 - \frac{a}{100}$ .	$\lambda$ $l$ $\lambda \left(1 - \frac{a}{100}\right) = c$ $5 + \Sigma(c) = \lambda l$ .	Number Living = $l$ .	Number Dying.	Age.	Mortality per Cent. = $a$ . $1 - \frac{a}{100}$ .	$\lambda$ $l$ $\lambda \left(1 - \frac{a}{100}\right) = c$ $5 + \Sigma(c) = \lambda l$ .	Number Living = $l$ .	Number Dying.
0....	3.260	5.00000	100,000	3,259	46....	5.992	44849	28,086	1,683
	.96740	.98561				.94008	.97316		
1....	3.568	4.98561	96,741	3,452	47....	5.984	42165	26,403	1,580
	.96432	.98422				.94016	.97320		
2....	3.982	4.96983	93,289	3,715	48....	5.985	39485	24,823	1,486
	.96018	.98235				.94015	.97320		
3....	4.127	4.95218	89,574	3,697	49....	5.995	36805	23,337	1,399
	.95873	.98170				.94005	.97315		
4....	4.546	4.93388	85,877	3,902	50....	6.025	34120	21,938	1,321
	.95454	.97980				.93975	.97302		
5....	4.726	4.91368	81,975	3,873	51....	6.054	31422	20,617	1,248
	.95274	.97898				.93946	.97288		
6....	4.953	4.89266	78,102	3,868	52....	6.110	28710	19,369	1,184
	.95047	.97794				.93890	.97262		
7....	4.864	4.87060	74,234	3,612	53....	6.579	25972	18,185	1,196
	.95136	.97834				.93421	.97045		
8....	4.750	4.84894	70,622	3,355	54....	6.241	23017	16,989	1,060
	.95250	.97886				.93759	.97202		
9....	4.688	4.82780	67,267	3,153	55....	6.306	20219	15,929	1,004
	.95312	.97915				.93694	.97171		
10....	4.615	4.80695	64,114	2,959	56....	6.418	17390	14,925	958
	.95385	.97948				.93582	.97119		
11....	4.590	4.78643	61,155	2,808	57....	6.227	14509	13,967	870
	.95410	.97959				.93773	.97208		
12....	4.549	4.76602	58,347	2,654	58....	6.044	11717	13,097	792
	.95451	.97978				.93956	.97292		
13....	4.541	4.74580	55,693	2,529	59....	5.991	10909	12,305	737
	.95459	.97982				.94009	.97317		
14....	4.550	4.72562	53,164	2,418	60....	6.014	106326	11,568	696
	.95450	.97978				.93986	.97306		
15....	4.570	4.70540	50,746	2,320	61....	6.099	103632	10,872	663
	.95430	.97968				.93901	.97267		
16....	4.620	4.68508	48,426	2,238	62....	6.328	400899	10,209	646
	.95380	.97946				.93672	.97161		
17....	4.765	4.66454	46,188	2,199	63....	6.610	398060	9,563	632
	.95235	.97880				.93390	.97030		
18....	4.970	4.64334	43,989	2,187	64....	6.988	395090	8,931	624
	.95030	.97786				.93012	.96854		
19....	5.100	4.62120	41,802	2,131	65....	7.348	391944	8,307	610
	.94900	.97727				.92652	.96686		
20....	5.282	4.59847	39,671	2,096	66....	7.992	388630	7,697	615
	.94718	.97643				.92008	.96383		
21....	5.396	4.57490	37,575	2,027	67....	9.115	385013	7,082	646
	.94604	.97591				.90885	.95850		
22....	5.557	4.55081	35,548	1,976	68....	10.700	380863	6,436	688
	.94443	.97517				.89300	.95085		
23....	5.656	4.52598	33,572	1,898	69....	11.689	375948	5,748	672
	.94344	.97472				.88311	.94602		
24....	5.793	4.50070	31,674	1,835	70....	13.073	370550	5,076	664
	.94207	.97409				.86927	.93916		
25....	5.877	4.47479	29,839	1,753	71....	13.928	364466	4,412	614
	.94123	.97370				.86072	.93486		

TABLE III.—Continued.

Age.	Mortality per Cent. = $a$ . $1 - \frac{a}{100}$ .	$\lambda \quad l$ $\lambda \left(1 - \frac{a}{100}\right) = c$ $5 + \Sigma(c) = \lambda l$ .	Number Living = $l$ .	Number Dying.	Age.	Mortality per Cent. = $a$ . $1 - \frac{a}{100}$ .	$\lambda \quad l$ $\lambda \left(1 - \frac{a}{100}\right) = c$ $5 + \Sigma(c) = \lambda l$ .	Number Living = $l$ .	Number Dying.
72....	15.111 ·84889	·57952 ·92886	3,798	574	87....	21.777 ·78223	2.22168 9.89334	167	32
73....	15.832 ·84168	·50838 ·92515	3,224	510	88....	23.095 ·76905	·11502 ·88596	130	30
74....	16.814 ·83186	·43353 ·92005	2,714	454	89....	24.687 ·75313	2.00098 ·87687	100	25
75....	17.401 ·82599	·35358 ·91698	2,257	393	90....	26.277 ·73723	1.87785 ·86761	75	19
76....	18.182 ·81818	·27056 ·91285	1,864	339	91....	27.877 ·72123	·74546 ·85808	56	16
77....	18.635 ·81365	·18341 ·91044	1,525	284	92....	29.582 ·70418	·60354 ·84769	40	12
78....	19.215 ·80785	·09385 ·90733	1,241	238	93....	31.127 ·68873	·45123 ·83805	28	9
79....	19.534 ·80466	3.00118 ·90561	1,003	196	94....	32.817 ·67183	·28928 ·82726	19	6
80....	19.914 ·80086	2.90679 ·90356	807	161	95....	34.297 ·65703	1.11654 ·81759	13	4
81....	20.100 ·79900	·81035 ·90255	646	130	96....	35.572 ·64428	0.93413 ·80908	9	3
82....	20.277 ·79723	·71290 ·90159	516	104	97....	36.644 ·63356	·74321 ·80179	6	2
83....	20.322 ·79678	·61449 ·90134	412	84	98....	37.482 ·62518	·54500 ·79601	4	2
84....	20.306 ·79694	·51583 ·90142	328	67	99....	38.066 ·61934	·34101 ·79193	2	1
85....	20.224 ·79776	·41725 ·90187	261	52	100....	38.650 ·61350	0.13294 ·78781	1	1
86....	20.098 ·79902	2.31912 9.90256	209	42					

It will thus be seen that an intemperate person of age 20 has an equal chance of living 15.6 years; while a person of the general population of the country at the same age has an equal chance of living 44.2 years longer. Again, at age 30, the intemperate person has an equal chance of 13.8 years, and the other 36.5 years. Also, at age 40, the chance of the one is 11.6 years, and of the other 28.8 years. The following will show the results at different ages:—

TABLE IV.—Equation of Life, being the Period of Years of which there is an equal chance of living, among the

Ages.	General Population, England and Wales.	Persons of Intemperate Habits.	
20.....	44.212	15,557, being 35 per cent.	} of the duration of life in the general popu- lation.
30.....	36.482	13,800, " 38 "	
40.....	28.790	11,627, " 40 "	
50.....	21.255	10,860, " 51 "	
60.....	14.285	8,947, " 63 "	



It would be curious to contrast with the above results the rate of mortality among persons who have been for a considerable period of years, or for the whole of life, abstainers from intoxicating drinks; but, unfortunately, there are no available data connected with this class of lives, and it seems there will long be considerable difficulty in procuring such information. A few years ago, Mr. Munro, of Enfield, at much trouble and expense, procured returns from Rechabite societies, showing the rate of mortality and sickness experienced by the members, and the results, although not published, are known to exhibit as high a rate of mortality and sickness as is found to prevail among the members of other friendly societies. The facts collected by Mr. Munro are of great value, and it is to be regretted that the societies furnishing them should, on account of the unfavourable nature of the results arrived at, object to their publication. For, although they show a high rate of mortality, it should be kept in view that all the members cannot yet be fairly considered as the type of genuine abstainers; many of them are reformed drunkards, and, as such, have become teetotallers with broken-down constitutions. It may therefore be justly stated, that until Rechabite societies have enrolled a class of members who have been abstainers from infancy, they cannot expect an entire immunity from those diseases and deteriorating influences on health to which less careful members of the community are subject.

In a most valuable paper submitted to this Society by Colonel Sykes, on the 15th of March last, will be found some remarkable facts as to the influence of intemperance on the sickness and mortality of European troops in the Madras presidency. Mr. Balfour, in his paper on Cholera, also gives some striking examples of the same class of results.

The facts collected in the preceding Schedule required an enumeration of the peculiar feature of the intemperance in respect to the favourite beverage, and it is curious to remark the influence of the different kinds of drink on the duration of life.

The duration of life, after the commencement of the intemperate habits, is,

Among beer drinkers	.....	21·7 years,
„ spirit drinkers	.....	16·7 „
And among those who drink both spirits and	}	16·1 „
beer indiscriminately		

and, consequently, the rate of mortality will be,

Among beer drinkers	.....	4·597 per cent. yearly.
„ spirit drinkers	.....	5·996 „ „
„ mixed drinkers	.....	6·194 „ „

Intemperate indulgence in the use of distilled liquors is hence more hurtful to health than the like use of fermented liquors, but the immoderate use of both combined is more injurious than the exclusive use of the one kind only.

These results are, however, not more curious than those connected with the different classes of persons.

The following shows the average duration of life, after the commencement of intemperate habits, among different classes of persons, namely:—

Among mechanics, working and labouring men....	18 years.
„ traders, dealers, and merchants .....	17 „
„ professional men and gentlemen .....	15 „
„ females .....	14 „

Among the general population, the distinction observable between the two first and the third of the classes is also known to exist, and the more regular and active physical exercises to which the members of the two first groups are subject, it is very probable, are the cause of the difference not only among the general population, but also among the intemperate persons now brought under observation.

It is obvious that none of the public records of this country connected with the hospitals or other public institutions, nor the returns of the Registrar-General, afford any means of knowing or ascertaining the number of deaths which take place from the use of intoxicating drinks; it is believed, however, that the present materials furnish better evidence on this question than anything else extant. In the returns of the Registrar-General, the nosological system adopted indicates what were the habits of the persons whose deaths are recorded, in one or two instances only, namely, when the death appears under the term delirium tremens, or intemperance. It is, therefore, evident that those must embrace but a very small number of the deaths which actually take place among persons addicted to intemperate habits.

The following table shows the deaths which have happened from different causes among the facts now collected:—

TABLE V.

Immediate Cause of Death.	Number of Deaths at the following Ages :															
	16 to 20.	21 to 25.	26 to 30.	31 to 35.	36 to 40.	41 to 45.	46 to 50.	51 to 55.	56 to 60.	61 to 65.	66 to 70.	71 to 75.	76 to 80.	81 to 85.	86 to 90.	
Apoplexy .....	...	...	2	1	5	4	5	2	2	1	1	...	1	...	...	
Brain .....	...	...	...	1	...	1	...	1	...	...	...	...	...	...	...	
Inflammation of Brain.....	...	...	...	...	1	...	1	...	1	...	...	...	...	...	...	
Paralysis.....	...	...	1	...	...	...	1	...	...	...	1	2	...	...	...	
Brain Fever .....	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	
Insanity .....	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	
Delirium Tremens.....	...	...	3	3	7	5	7	3	4	1	2	2	1	...	...	
Tetanus .....	...	2	7	10	16	10	5	3	2	...	...	2	...	...	...	
...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	
...	...	2	10	13	23	15	13	6	7	1	2	4	1	...	...	
Disease of Chest .....	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	
Decay of Nature .....	...	...	...	...	1	...	...	...	1	...	...	...	...	1	1	
Phthisis .....	...	5	7	6	5	4	6	6	1	...	...	...	...	...	...	
Atrophy .....	...	...	1	...	...	3	3	...	...	1	2	...	...	...	...	
Cancer of Gums and Tongue ...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	
Inflammation of Lungs .....	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	
Hydrothorax .....	...	...	...	...	...	...	1	...	...	1	1	...	...	...	...	
Pulmonary.....	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	
Pneumonia.....	...	...	3	...	1	1	...	1	...	...	...	...	...	...	...	
Empyema .....	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	
Decline .....	...	...	...	...	1	1	...	1	...	...	...	...	...	...	...	
Bronchitis .....	1	...	...	...	1	...	...	...	2	1	...	...	...	...	...	
Asthma .....	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	
Hæmoptysis .....	...	1	1	...	1	...	...	...	...	...	...	...	...	...	...	
	1	6	12	7	11	11	10	8	5	4	5	...	...	1	1	



TABLE V.—Continued.

Immediate Cause of Death.	Number of Deaths at the following Ages:														
	16 to 20.	21 to 25.	26 to 30.	31 to 35.	36 to 40.	41 to 45.	46 to 50.	51 to 55.	56 to 60.	61 to 65.	66 to 70.	71 to 75.	76 to 80.	81 to 85.	86 to 90.
Liver Disease and Dropsy .....	...	1	1	2	...	2	2	3	2	2	2	2	1	...	...
Dropsy .....	...	1	1	2	3	3	3	...	5	2	2	4	...	...	...
Stomach Disease .....	...	1	...	...	1	...	2	1	2	...	1	...	...	...	...
Liver Disease .....	...	...	1	...	1	3	6	3	2	...	3	...	...	...	...
Liver Disease, Atrophy .....	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Disease of Viscera.....	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Hepatitis .....	...	...	...	...	...	...	...	1	...	1	2	1	...	...	...
Ascitis.....	...	1	...	1	...	...	...	...	...	1	...	...	...	...	...
	...	4	3	6	6	8	13	8	11	6	10	7	1	...	...
Gout .....	...	...	...	...	...	2	...	...	1	...	...	...	...	...	...
Rheumatism .....	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...
Heart Disease .....	...	...	...	...	1	1	1	...	...	...	...	...	...	...	...
Aneurism .....	...	...	...	1	...	1	1	...	...	...	...	...	...	...	...
	...	...	...	1	2	4	2	...	2	...	...	...	...	...	...
Urinary Organs.....	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Enteritis.....	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Retention of Urine .....	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Ulceration of Bladder .....	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Disease of Kidneys .....	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Ileus .....	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
	...	...	...	...	...	...	2	1	...	1	...	1	...	1	...
Peritonitis .....	...	...	2	...	1	...	...	...	...	...	...	...	...	...	...
Ulceration of Bowels .....	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Gastro-Enteritis .....	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...
Intussusception .....	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
	...	...	2	...	1	...	...	...	...	1	3	...	...	...	...
Typhus Fever .....	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Fever .....	...	...	1	2	1	2	...	...	1	...	...	...	...	...	...
Inflammation and Gastric Fever .....	...	...	...	...	1	1	...	...	1	2	...	...	...	...	...
	...	1	1	2	2	3	...	...	2	2	...	...	...	...	...
Cholera ... ..	...	...	...	...	1	1	1	...	...	...	...	...	...	...	...
Diarrhœa .....	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
	...	...	...	...	1	1	1	...	...	1	...	...	...	...	...
Suicide .....	...	2	1	1	2	2	1	...	...	...	...	...	...	...	...
Found Drowned .....	...	...	...	2	2	1	...	...	1	...	...	...	...	...	...
Falls .....	...	1	1	...	1	...	2	...	1	...	...	1	...	...	...
Not stated .....	...	...	...	...	2	1	...	...	4	...	3	2	...	...	...
Erysipelas .....	...	...	...	...	...	1	1	1	...	...	...	1	...	...	...
Coma .....	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...
Gangrene .....	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Intoxication .....	...	...	...	...	...	3	2	1	2	...	...	...	...	...	...
Syphilis .....	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...
Injury of Testate .....	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Hæmatemesis .....	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Burns .....	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
	...	1	2	2	6	7	5	4	8	...	4	6	...	...	...

The following abstract of this table will give a condensed view of the general results arrived at:—

## ABSTRACT B.

Immediate Cause of Death.	Number of Deaths at the following Ages :															Total.
	16 to 20.	21 to 25.	26 to 30.	31 to 35.	36 to 40.	41 to 45.	46 to 50.	51 to 55.	56 to 60.	61 to 65.	66 to 70.	71 to 75.	76 to 80.	81 to 85.	86 to 90.	
Head Diseases .....	...	2	10	13	23	15	13	6	7	1	2	4	1	...	...	97
Respiratory .....	1	6	12	7	11	11	10	8	5	4	5	...	...	1	1	82
Liver Disease and Dropsy .....	...	4	3	6	6	8	13	8	11	6	10	7	1	...	...	83
Gout, Rheumatism, and Heart... ..	...	...	...	1	2	4	2	...	2	...	...	...	...	...	...	11
Urinary Organs.....	...	...	...	...	...	...	2	1	...	1	...	1	...	1	...	6
Bowel Disease .....	...	...	2	...	1	...	...	...	...	1	3	...	...	...	...	7
Fevers.....	...	1	1	2	2	3	...	...	2	2	...	...	...	...	...	13
Cholera and Diarrhoea .....	...	...	...	...	1	1	1	...	...	1	...	...	...	...	...	4
Suicide .....	...	2	1	1	2	2	1	...	...	...	...	...	...	...	...	9
Other Diseases .....	...	1	2	2	6	7	5	4	8	...	4	6	...	...	...	45
Total .....	1	16	31	32	54	51	47	27	35	16	24	18	2	2	1	357
Delirium Tremens, included } in Head Diseases .....	...	2	7	10	16	10	5	3	2	...	...	2	...	...	...	57
Intemperance .....	...	...	...	...	...	3	2	1	2	...	...	...	...	...	...	8
		9		26		20		8				2				65
Or one in .....		5.22		3.31		4.90		7.75		...		10.00				

From which it appears that the greatest number of deaths has taken place from head diseases (nervous system) namely 97, and of which 57 are recorded under the head of "delirium tremens." The next in order are disease of the liver, dropsy, &c., and nearly the same number from diseases of the respiratory organs. These results are rather curious, as showing the very marked influence which intemperate habits have on the cause of death. Among the population of England and Wales, aged 20 and upwards, the deaths from head-diseases (nervous system) constitute only 9.710 per cent. of the deaths from all causes at those ages; but among the intemperate classes they constitute 27.100 per cent., being nearly three times as great. With other diseases, like discrepancies will be found. In the general community, the deaths from diseases of the respiratory organs, at the same periods of life, amount to 33.150 per cent. of the deaths from all causes; while among the intemperate group they are only 22.980 per cent. of all the deaths. The following figures exhibit these relations for England and Wales, for the Gotha Life Office, and the "Scottish Widows' Fund" (both select classes, the detailed results of which will be found at pages 346-355, of volume xiii. of the Journal of this Society), and also for intemperate lives.

## ABSTRACT C.

*Ratio per Cent. of Deaths, at ages 20 and upwards, from different causes, to the Total Deaths, from all causes, at the corresponding ages, in*

Cause of Death.	England and Wales, 1847.	Gotha Life Office.	Scottish Widows' Fund.	Intemperate Lives.
Head diseases .....	9.710	15.176	20.720	27.10
Digestive organs .....	6.240	8.377	11.994	23.30
Respiratory organs .....	33.150	27.843	23.676	22.98
Total of the above three } classes .....	49.100	51.396	56.390	73.38



In England and Wales, the above three groups of diseases constitute 49·100 per cent. of the whole deaths; but in the intemperate class of lives, they form 73·38 per cent. The most remarkable peculiarity in this respect is, however, the excessive development among intemperate persons of diseases of the nervous system and of the digestive organs. In England and Wales, these two groups form 15·950 per cent. of the deaths from all causes at the corresponding ages; but amongst intemperate persons they form 50·40 per cent. of all the deaths which take place, exceeding the general average more than three times. These may, therefore, be regarded as the distinctive type of the causes of death among intemperate persons; and the predominance of deaths assigned to such causes in any particular collection of facts, may fairly, in the absence of other and more direct evidence, lead to the inference of irregularity of habits having prevailed to an unusual extent. An inspection of the results given for the “Scottish Widows’ Fund” immediately strikes the attention with the marked characteristics of this circumstance; there is an excess of the diseases of the nervous system and digestive organs, and a diminution of those of the respiratory organs, being the same features, although not developed in so marked a degree, observable in the decidedly intemperate group of lives. The following shows that the results for the “Scottish Widows’ Fund” hold something like an intermediate place between those for England and Wales generally and the “intemperate group:”—

ABSTRACT D.

Group of Facts.	Ratio per Cent. of Deaths to Total Deaths from Diseases of the	
	Nervous System and Digestive Organs.	Respiratory Organs.
England and Wales .....	15·950 per cent.	33·150 per cent.
Scottish Widows’ Fund .....	32·714     ,,	23·676     ,,
Intemperate Lives .....	50·400     ,,	22·980     ,,

Dr. Begbie, in his interesting report on the mortality of the “Scottish Widows’ Fund,” although alluding to the fact that several of the persons who died from diseases of the digestive organs were reported “free livers,” does still not seem to have been impressed with the remarkably-high ratio of deaths from this cause in the materials before him.

It has been said that the returns of the Registrar-General do not afford the means of determining the number of deaths which take place in this country from the use of intoxicating drinks; but if viewed in connection with the data brought forward in this paper, it is obvious that means are now supplied of making a near approximation to the results required; and, with this view, attention is directed to the following table:—

TABLE VI.  
Deaths in England and Wales, 1847, from

Ages.	Delirium Tremens.			Intemperance.			Both.			All Causes.		
	Males.	Fem.	Both.	Males.	Fem.	Both.	Males.	Fem.	Both.	Males.	Fem.	Both.
16—20	2	...	2	5	...	5	7	...	7	6,615	7,126	13,741
21—30	59	9	68	23	12	35	82	21	103	15,457	16,514	31,971
31—40	153	13	166	39	17	56	192	30	222	13,459	15,010	28,469
41—50	131	18	149	46	17	63	177	35	212	14,044	13,379	27,423
51—60	43	4	47	43	17	60	86	21	107	14,596	13,666	28,262
61—70	26	6	32	23	6	29	49	12	61	17,923	18,048	35,971
71—80	9	1	10	5	1	6	14	2	16	19,292	21,334	40,626
81—90	1	1	2	...	1	1	1	2	3	10,138	12,179	22,317
	424	52	476	184	71	255	608	123	731	111,524	117,256	228,780

The deaths recorded “delirium tremens” and “intemperance,” it will be seen, on referring to Abstract B, preceding, constitute but a small portion of the total deaths taking place among persons addicted to intemperate habits; but the following table is, however, prepared to show the rate of mortality for each sex and term of life in England and Wales from those two specified causes:—

TABLE VII.

MALES.						
Ages.	Log. of Annual Rate of Increase of Population. (1)	6 (1) } λ Popula- tion in 1841 } (2)	Population in 1847 Number Dy- ing × 100 from Delirium Tremens and Intemperance (4).	(2) + (3) λ (4)	λ Mortality per Cent.	Mortality per Cent.
16—20....	0·0065216	0·0391296	854,600	5·9317623	6·9133257	·00082
21—30....	·0095741	5·8926327 ·0574446	700 1,521,610	2·8450980 6·1823033	7·7315106	·00539
31—40....	·0085533	6·1248587 ·0513198	8,200 1,124,308	3·9138139 6·0508853	8·2324161	·01708
41—50....	·0067954	5·9995655 ·0407724	19,200 822,161	4·2833012 5·9149567	8·3330166	·02153
51—60....	·0053307	·8741843 ·0319842	17,700 534,419	4·2479733 5·7278816	8·2066169	·01609
61—70....	·0044890	·6958974 ·0269340	8,600 350,649	3·9344985 5·5448725	8·1453236	·01397
71—80....	·0043558	·5179385 ·0261348	4,900 169,447	3·6901961 5·2290343	7·9170837	·00826
81—90....	0·0044547	5·2028995 0·0267282	1,400 43,841	3·1461280 4·6418783	7·3581217	·00228
		4·6151501	100	2·0000000		



TABLE VII.—Continued.

## FEMALES.

16—20....	0·0059608	0·0357648	874,197	5·9416092	....	....
		5,9058444	....	....		
21—30....	·0081530	·0489180	1,677,442	6·2246475	7·0975718	·00125
		6,1757295	2,100	3·3222193		
31—40....	·0075728	·0454368	1,167,477	6·0672482	7·4098731	·00257
		6,0218114	3,000	3·4771213		
41—50....	·0066544	·0399264	852,367	5·9306268	7·6134412	·00411
		5·8907004	3,500	3·5440680		
51—60....	·0059566	·0357396	574,672	5·7594202	7·5627991	·00365
		·7236806	2,100	3·3222193		
61—70....	·0056652	·0339912	399,580	5·6016033	7·4775779	·00300
		·5676121	1,200	3·0791812		
71—80....	·0056223	·0337338	199,368	5·2996548	7·0013752	·00100
		5·2659210	200	2·3010300		
81—90....	0·0053864	0·0323184	57,271	4·7579360	7·5430940	·00349
		4·7256176	200	2·3010300		

The following abstract of this table shows the relation of the mortality in the sexes from those causes:—

## ABSTRACT E.

Ages.	Mortality per Cent. from Delirium Tremens and specified Intemperance, amongst		
	Males, 1847.	Females, 1847.	Ratio of the Mortality of Females to Males.
21—30.....	·00539	·00125	23 per cent.
31—40.....	·01708	·00257	15 „
41—50.....	·02153	·00411	19 „
51—60.....	·01609	·00365	23 „
61—70.....	·01397	·00300	22 „
71—80.....	·00826	·00100	12 „

The figures in the last column show that the mortality of the female sex is, on an average, about one-fifth of that of the males, varying from 23 per cent. at age 21-30, to 12 per cent. at age 71-80. It will likewise be seen that the maximum rate of mortality in both sexes is at the term of life 41-50 gradually increasing from the younger ages to that period, and then decreasing to the more advanced ages. The above rate of mortality must not be confounded with that given in Abstract A, which showed, as is usual in tables of mortality, an increasing rate from the younger to the older ages. There is an important distinction between the two classes of facts. Abstract A shows the rate of mortality among a class of people all of whom have indulged in the immoderate use of intoxicating drinks, while the facts given immediately above show the proportion of deaths from certain forms of intemperance in the community generally at the respective terms of life; and although it be true that the rate of mortality is higher in the decade 41-50, it is not to be inferred that intemperate habits have the most detrimental effect on the constitution at those ages, for Abstract A proves that as age increases, the baneful influence on health of strong drinks also increases; the legitimate inference to be drawn is, simply, that drinking habits are more prevalent at that term of life than at any other; in fact, the figures just given demon-

strate that the folly of indulging in the intemperate use of strong drinks grows on the community from youth to the mature period of manhood, 41-50 years of age, after which time the mind gets sobered into the more limited use of them, avoiding the excesses of earlier years.

But perhaps the most curious circumstance disclosed by the above figures is the remarkable similarity between the proportion of crime in the sexes to the proportion of deaths from assigned causes of intemperance. By referring to clause 2, page 153, volume XI. of the *Statistical Journal*, it will be found that the tendency to crime in the male sex is nearly five times greater than that in the female sex, or, more strictly, in the relation of 336 to 1581; while the ratio of deaths to the population from assigned intemperate causes, at age 20 and upwards, are in the exact relation of 8,011 to 36,769, a most remarkable agreement, the difference being under 2·5 per cent.; 7,814 substituted for 8,011 would give the precise relation of the figures showing the tendency of crime in the sexes. This is rather a strange coincidence, and may be viewed probably by most careful observers as proving that crime legally considered, and intemperance in its ordinary acceptance, are the concomitants of each other.

So far the deaths from intemperate habits have, in regard to the general population of England and Wales, been spoken of as recorded under assigned causes in the reports of the Registrar-General; but it must be evident that the deaths actually occasioned, or, at all events, hastened, by extreme indulgence in intoxicating liquors, far exceed those nominally recorded in the official returns. This is satisfactorily proved by the facts in Table V. and Abstract B. And assuming that in the country generally the deaths in the Registrar-General's returns from intemperance would bear the same relation to those under assigned causes, which the more careful observation of the facts analysed in Abstract B shows to obtain, it becomes a very easy matter to determine the number and ratio of deaths which actually take place among intemperate persons in England and Wales. On this hypothesis, the following table has been constructed:—

TABLE VIII.—*Intemperance—England and Wales, 1847.*

Age.	MALES.				FEMALES.			
	Number Dying from Intemperance. (1)	$\lambda((1) \times 100) (2)$ $\lambda$ Population. (3)	(2) — (3).	Mortality per Cent.	Number Dying from Intemperance. (1)	$\lambda((1) \times 100) (2)$ $\lambda$ Population. (3)	(2) — (3).	Mortality per Cent.
21—30....	428	4·6314438 6·1823033	8·4491405	·0281	110	4·0413927 6·2246475	7·8177452	·0066
31—40....	646	4·8102325 6·0508853	8·7593472	·0575	99	3·9956352 6·0672482	7·9283870	·0085
41—50....	867	4·9380191 5·9149567	9·0230624	·1055	172	4·2355284 5·9306268	8·3049016	·0202
51—60....	666	4·8234742 5·7278816	9·0955926	·1246	163	4·2121876 5·7594202	8·4527674	·0284
61—70....	435	4·6384893 5·5448725	9·0936168	·1241	107	4·0293838 5·6016033	8·4277805	·0268
71—80....	140	4·1461280 5·2290343	8·9170937	·0826	20	3·3010300 5·2996548	8·0013752	·0100
	3,182				671			



TABLE VIII.—Continued.

MALES AND FEMALES.					
Age.	Population, Males. (1)	Number Dying from Intemperance. (3)	$\lambda \left( (3) \times 100 \right).$ (5)	(5) — (6).	Mortality per Cent.
	Population, Females. (2)	(1) + (2). (4)	$\lambda$ Population. (6)		
21—30 .....	1,521,610	538	4·7307823	8·2257590	·0168
31—40 .....	1,677,442	3,199,052	6·5050233	·5119824	·0325
	1,124,308	745	4·8721563		
41—50 .....	1,167,477	2,291,785	6·3601739	·7927230	·0620
	822,161	1,039	5·0166155		
51—60 .....	852,367	1,674,528	6·2238925	·8735874	·0747
	534,419	829	4·9185545		
61—70 .....	574,672	1,109,091	6·0449671	·8588055	·0722
	350,649	542	4·7339993		
71—80 .....	399,580	750,229	5·8751938	8·6373114	·0434
	169,447	160	4·2041200		
	199,368	368,815	5·5668086		

In the above results, showing the ratio of deaths as resulting from all intemperate causes, it will be observed that the maximum mortality takes place ten years later in life than in the results given in Table VII. and subsequent abstract. This difference is due to the reduced ratio of deaths from delirium tremens at ages 51-60, in Abstract B; but, notwithstanding, it will be found that the relation of mortality in the male and female population is nearly as 5 to 1, being as 7,259 to 1,421.

The following table exhibits the rate of mortality in the whole population of England and Wales for the year 1847, being the same period to which the facts already discussed in regard to intemperance relate. In page 292, vol. viii., of the Journal of the Society, will be found the rate of mortality formerly determined for England and Wales for the years 1838-41, and a comparison will show the increased mortality in the more recent year to be very considerable:—

TABLE IX.—All Causes—England and Wales, 1847.

Age.	MALES.				FEMALES.			
	Number Dying from all Causes. (1)	$\lambda \left( (1) \times 100 \right)$ (2) $\lambda$ Population. (3)	(2) — (3).	Mortality per Cent.	Number Dying from all Causes. (1)	$\lambda \left( (1) \times 100 \right)$ (2) $\lambda$ Population. (3)	(2) — (3)	Mortality per Cent.
—30....	15,457	6·1891252	0·0068219	1·016	16,514	6·2178523	9·9932048	·984
—40....	13,459	6·1823033	·0781275	1·197	15,010	6·2246475	0·1091325	1·286
		6·1290128				6·1763807		
—50....	14,044	6·0508853	·2325341	1·708	13,379	6·0672482	0·1957969	1·570
		6·1474908				6·1264237		
—60....	14,596	5·9149567	·4363523	2·731	13,666	5·9306268	0·3762212	2·378
		6·1642339				6·1356414		
—70....	17,923	5·7278816	0·7085382	5·111	18,048	5·7594202	0·6548258	4·517
		6·2534107				6·2564291		
—80....	19,292	5·5448725	1·0563430	11·385	21,334	5·6016033	1·0294175	10·701
		6·2853773				6·3290723		
	94,771	5·2290343			97,951	5·2996548		

The following abstract gives the relation of the rate of mortality from intemperance to that from all causes for different terms of life:—

Ages.	Mortality per Cent. from				Ratio of the Deaths from Intemperance to those from all causes.			
	All Causes, 1847.		Intemperance.					
	Males.	Females.	Males.	Females.	Males.		Females.	
					Per Cent. or 1 in		Per Cent. or 1 in	
21—30....	1·016	·984	·0281	·0066	2·8	36	·7	149
31—40....	1·197	1·286	·0575	·0085	4·8	21	·7	151
41—50....	1·708	1·570	·1055	·0202	6·2	16	1·3	78
51—60....	2·731	2·378	·1246	·0284	4·5	22	1·2	84
61—70....	5·111	4·517	·1241	·0268	2·4	41	·6	168
71—80....	11·385	10·701	·0826	·0100	·7	138	·09	1,070

From the figures in columns 2 and 6 of Table VIII., it will be seen that, among persons addicted to decidedly intoxicating habits, 3,182 males and 671 females die yearly, or 3,853 of both sexes. This is strangely at variance with the statements put forth by some of the reformation societies, which make the number to be 50,000 yearly, or upwards of 1 in 4 of the whole deaths at the corresponding ages of the deaths from all causes.

As the process is a simple one, it may be interesting to conclude this paper with an estimate of the persons of each sex in England and Wales who are addicted to such habits of intemperance as will ultimately bring them within the preceding catalogue of deaths. If

$\delta$  = the number of deaths yearly taking place from intemperance in the corrected results of the returns of the Registrar-General, as given in Table VIII., and

$\pi$  = the mortality per cent. among persons of known intemperate habits, as given in Abstract A,

then  $\frac{\delta \cdot 100}{\pi}$  = the existing number of drunkards, or persons given to extreme drinking usages.

On this principle, the following table has been constructed:—

TABLE X.—*England and Wales, 1847.*

Age.	MALES.			
	Number of Deaths from Intemperance. (1)	$\lambda \left( (1) \times 100 \right).$ (3)	(3) — (4).	Existing Number of Drunkards.
	Mortality per Cent. (2)	$\lambda$ (2). (4)		
21—30 .....	428	4·6314438	3·9365755	8,641
	4·953	0·6948683		
31—40 .....	646	4·8102325	4·1455905	13,983
	4·620	0·6646420		
41—50 .....	867	4·9380191	4·1604473	14,469
	5·992	0·7775718		
51—60 .....	666	4·8234742	4·0160745	10,377
	6·418	0·8073997		
61—70 .....	435	4·6384893	3·7358338	5,443
	7·992	0·9026555		
71—80 .....	140	4·1461280	2·8864863	670
	18·182	1·2596417		
				53,583



TABLE X.—Continued.

Age.	FEMALES.				MALES AND FEMALES.
	Number of Deaths from Intemper- ance. (1)	$\lambda \left( (1) \times 100 \right).$ (3)	(3) — (4).	Existing Number of Drunkards.	Existing Number of Drunkards.
	Mortality per Cent. (2)	$\lambda$ (2). (4)			
21—30 ....	110	4·0413927	3·3465244	2,221	10,862
31—40 ....	4·953	0·6948683	3·3309932	2,143	16,126
	99	3·9956352			
41—50 ....	4·620	0·6646420	3·4579566	2,870	17,339
	172	4·2355284			
51—60 ....	5·992	0·7775718	3·4047879	2,540	12,917
	163	4·2121876			
61—70 ....	6·418	0·8073997	3·1267283	1,339	6,782
	107	4·0293838			
71—80 ....	7·992	0·9026555	2·0413883	110	780
	20	3·3010300			
	18·182	1·2596417		11,223	64,806

From which it appears that the number of

drunkards is

Males = 53,583

Females = 11,223

Total = 64,806

which gives 1 drunkard to every 74 of the male population,  
1        "        "        434 of the female population,  
and 1        "        "        145 of both sexes above the age of 20.  
The following gives the ratio of drunkards at each term of life:—

Ages.	MALES.			FEMALES.		
	Population, 1847.	Drunk- ards.	Ratio of Drunkards to Population.	Population, 1847.	Drunk- ards.	Ratio of Drunkards to Population.
			Per Cent. or 1 in			Per Cent. or 1 in
21—30....	1,521,610	8,641	·57    176	1,677,442	2,221	·13    755
31—40....	1,124,308	13,983	1·25    80	1,167,477	2,143	·18    545
41—50....	822,161	14,469	1·75    57	852,367	2,870	·34    297
51—60....	534,419	10,377	1·92    52	574,672	2,540	·44    226
61—70....	350,649	5,443	1·56    64	399,580	1,339	·34    298
71—80....	169,447	670	·40    253	199,368	110	·055 1,812

It is hoped that the facts contained in this contribution may throw some light on a question not hitherto investigated statistically; and while they may point out to assurance offices and other companies trading in pecuniary adventures on life the perilous nature of such risks, and the urgent necessity for a high rate of premium, they will also not be without valuable influence on the social, political, and religious condition of society.

*A Statistical Review of the National Debts and Revenues in proportion to the extent of Area and Population of the various Countries of Europe.* By T. J. BROWN, Esq. (Assistant Secretary).

[Read before the Statistical Society of London, 19th May, 1851.]

IN compiling the following observations, I have consulted the *Almanach de Gotha* and *Oberhausen* for the Debts and Revenues, and *Reden's Statistical Journal*, *Ritter's Statistical Geography*, another by *Richter*, and the *Conversations Lexicon*, published at Leipsic, by *Brockhausen*, for the extent of the areas and population; and divided the various European States, as regards their Public Debt, into six classes

I. States without any debt—

- |                          |                           |
|--------------------------|---------------------------|
| 1. Duchy of Lichtenstein | 4. Grand Duchy of Tuscany |
| 2. „ Lippe Detmold       | 5. Kingdom of Sweden      |
| 3. „ Schaumburg          | 6. Switzerland.           |

II. States whose debt is under 100,000*l.*—

Principality of Hohenzollern Sigmaringen	Principality of Schwarzburg Sonderhausen
„ Schwarzburg Rudolstadt	„ Lucca
„ Reuss	„ Duchy of Modena
„ Hohenzollern Hechingen	„ Waldeck.

III. States with debts from 100,000*l.* to 500,000*l.*—

- |                         |                                   |
|-------------------------|-----------------------------------|
| 1. Grand Duchy—Nassau   | 13. Duchy—Saxe-Meiningen-Hilburg- |
| 2. „ Oldenburg          | hausen                            |
| 3. „ Mecklenburg Stre-  | 14. „ Saxe-Coburg-Gotha           |
| litz                    | 15. „ Anhalt Köthen               |
| 4. „ Saxe-Weimar        | 16. „ Brunswick                   |
| 5. „ Mecklenburg Schwe- | 17. The Ionian Islands            |
| rin                     | 18. Electorate—Hesse              |
| 6. „ Baden              | 19. Republic—Lübeck               |
| 7. Duchy—Nassau         | 20. „ Bremen                      |
| 8. „ Parma              | 21. „ Frankfurt                   |
| 9. „ Hesse Homburg      | 22. Kingdom—Württemberg           |
| 10. „ Anhalt Dessau     | 23. „ Greece                      |
| 11. „ Saxe Altenburg    | 24. „ Saxony                      |
| 12. „ Anhalt Bernburg   | 25. „ Hanover.                    |

IV. States with debts from 5,000,000*l.* to 10,000,000*l.* sterling—

- |           |                      |
|-----------|----------------------|
| 1. Turkey | 2. Republic—Hamburg. |
|-----------|----------------------|

V. States with debts from 10,000,000*l.* to 100,000,000*l.* sterling—

- |                 |                  |
|-----------------|------------------|
| 1. Bavaria      | 6. Portugal      |
| 2. Denmark      | 7. Belgium       |
| 3. Papal States | 8. Prussia       |
| 4. Sardinia     | 9. Russia        |
| 5. Sicily       | 10. Netherlands. |

VI. States with debts above 100,000,000*l.* sterling—

- |            |                   |
|------------|-------------------|
| 1. Austria | 3. France         |
| 2. Spain   | 4. Great Britain. |



The states of *Central Europe*, such as Germany, Holland, Russia, Austria, Great Britain, France, and Switzerland, bear a national debt amounting to 1,360,674,405*l*.

The states of *Northern Europe*, such as Russia and Denmark, bear a debt of 111,756,617*l*.

The states of *Southern Europe*, such as Portugal, Spain, Italy, the Ionian Islands, Turkey, and Greece, bear a debt of 280,847,104*l*.

*The eight Republics of Europe*—France, Switzerland, Hamburg, Lubeck, Bremen, Frankfort, the Ionian Islands, and San Marino—have a debt amounting to 260,069,804*l*.

*The three Empires*—Austria, Russia, and Turkey, have a debt of 245,259,204*l*.

*The fourteen Kingdoms*—Bavaria, Belgium, Great Britain, Denmark, Greece, Holland, Hanover, Portugal, Prussia, Saxony, Sardinia, Sicily, Spain, and Würtemberg, have a debt amounting to 1,224,490,060*l*.

*The seven Grand Duchies*—Baden, Hesse-Darmstadt, Mecklenburg Schwerin, Mecklenburg Strelitz, Oldenburg, Saxe-Weimar, and Tuscany, have a debt of 6,700,218*l*.

*The eleven Duchies*—The three Anhalts, Brunswick, Lucca, Modena, Nassau, Parma, and the three Saxes, have a debt of 3,793,159*l*.

*The ten Principalities*—The two Hohenzollerns, Lichtenstein, two Lippes, two Reuss, the two Schwarzenburgs, and Waldeck, have a debt of 196,049*l*.

*The one Electorate*, Hesse, has a debt of 246,385*l*.

*The one Papal State* has a debt of 12,397,888*l*.

The public debt of the five great powers—Russia, Austria, Prussia, England, and France, forms about three-fourths of the whole European debt.

Hohenzollern Sigmaringen sustains the *minimum* amount of debt, and Great Britain the *maximum*, whose debt alone forms  $\frac{7}{17}$  of the whole European debt.

Austria, France, England, and Spain, represent  $\frac{13}{17}$  of the whole European debt.

The debt of the whole of Central Europe is about the same as that of the five great powers collectively; while the debt of Austria exceeds that of the whole of Northern Europe (Russia included).

There is but one Kingdom which is free of debt; while that of the other fourteen Monarchies of Europe form more than  $\frac{3}{4}$  of the whole of the European debt.

The seven grand duchies, eleven duchies, ten principalities, and the one electorate, do not represent  $\frac{1}{23}$  of the debt of France.

The eight republics participate in  $\frac{3}{20}$  of the European debt; while the other  $\frac{17}{20}$  devolve upon the monarchies.

Germany (containing 38 states) bears a debt of 222,294,608*l*., or about  $\frac{1}{8}$  of the whole European debt.

#### *In Proportion to the Area.*

Europe is the smallest in superficial extent of the three divisions of the Old World, whilst in comparison with the more modern divisions, the area of Europe is not much larger than that of Australia (about

180,000 geographical square miles); every square mile in Europe is thus burdened with 9,740*l.* of the public debt.

But taking the various states separately, we obtain the following results, in regard to the debt, proportionately to the extent of the area of the respective countries:—

	Per each Geographical Square Mile. £		Per each Geographical Square Mile. £
Hamburgh .....	736,608	Bavaria .....	7,548
Netherlands.....	186,939	Saxe Altenburg .....	7,405
Frankfort.....	144,210	Mecklenburg Schwerin .....	6,398
Great Britain .....	141,490	The Ionian Islands .....	6,178
Bremen .....	133,333	Hohenzollern Hechingen ....	5,333
Anhalt Köthen .....	43,283	Hanover .....	5,015
Belgium .....	36,992	Mecklenburg Strelitz .....	5,000
France.....	25,128	Lübeck .....	4,909
Spain .....	23,757	Prussia.....	4,812
Brunswick .....	20,292	Greece.....	4,418
Hesse Homburg .....	15,670	Waldeck .....	4,286
Papal States .....	15,270	Hesse (Grand Duchy).....	2,477
Anhalt Bernburg .....	14,911	Schwarzburg Sondershausen	2,219
Baden .....	13,421	Nassau.....	1,506
Saxony .....	12,740	Parma .....	1,436
Denmark.....	12,053	Oldenburg .....	1,319
Portugal .....	11,400	Hesse (Electorate) .....	1,185
Austria .....	11,202	Modena .....	707
Saxe Weimar .....	10,738	Reuss .....	643
Anhalt Dessau.....	10,268	Schwarzburg Rudolstadt.....	526
Sardinia .....	9,536	Hohenzollern-Sigmaringen....	463
Sicily .....	9,196	Russia (in Europe).....	247
Württemberg .....	9,155	Turkey (in Europe).....	168
Saxe Meiningen .....	8,103		

It thus appears, that estimating the extent of the public debt of each country by its area, Hamburgh sustains the *maximum*, and Russia and Turkey the *minimum* of debt; Great Britain ranks *very high*, as also three of the eight republics, viz., France, Frankfort, and Bremen; but Austria, whose state bonds and exchequer bills are *mostly* depreciated, occupies a much lower position in the scale, and though almost devoid of credit, sustains an amount of debt only a thirty-sixth part of Hamburgh, with almost unlimited credit; which simply proves, that it is not the extent of debt that undermines the state's credit, but the want of the natural resources to cover the required interests.

Of the five great powers in the above list, Great Britain stands highest, and the rest as follows:—

Great Britain's debt	=	5 times that of France.	
„ „	=	12	„ Austria.
„ „	=	29	„ Prussia.
„ „	=	571	„ Russia.
France's debt .....	=	2	„ Austria.
„ „ .....	=	5	„ Prussia.
„ „ .....	=	100	„ Russia.
Austria's debt .....	=	2	„ Prussia.
„ „ .....	=	46	„ Russia.
Prussia's debt .....	=	20	„ Russia.



*In Proportion to the Population.*

The population of Europe is estimated at 260,000,000, giving an average of rather more than 6.15 per head of the European public debt; but the following are the countries bearing the greatest amount per head:—

	£	s.		£	s.
Netherlands ..... per head	31	0	Spain ..... per head	16	7
Great Britain..... „	29	0	Anhalt Köthen .... „	15	0
Hamburg ..... „	27	0			

Frankfort, Lubeck, and France, are about the average, and—

	£	s.		£	s.
Portugal ..... per head	5	14	Hesse Homburg..... per head	5	0
Belgium ..... „	5	10	Greece ..... „	4	18
Bremen ..... „	5	5	Anhalt Bernburg .... „	4	16
Brunswick ..... „	5	4	Papal States ..... „	4	4
Denmark ..... „	5	2	Austria ..... „	3	12

Amongst the lower ones are Hanover, Saxe-Weimar, Anhalt, Dessau, Mecklenburg-Schwerin, Sardinia, Saxe-Coburg, Bavaria, Saxe-Meiningen, Sicily, Baden, Saxony, Mecklenburg-Strelitz, Würtemberg, Hohenzollern-Hechingen, Waldeck, Prussia, Russia, Saxe-Altenburg; the highest of which is Hanover, at 2*l.* 8*s.* per head; and the lowest Saxe-Altenburg, at 1*l.* 8*s.*; while Prussia pays 1*l.* 10*s.* and Russia 1*l.* 9*s.* per head.

The states whose debts are the largest, as regards both the extent of Territory and the number of Population, are Netherlands, Great Britain, Hamburg, Anhalt Köthen, Frankfort, and France; and the smallest are Russia, Schwarzburg, Sondershausen, Grand Duchy Hesse, Turkey, Electorate Hesse, Parma, Nassau, Hohenzollern-Sigmaringen, Schwarzburg Rudolstadt, Modena, and Reuss.

Austria, whose debt, though it exceeds somewhat the average standard of 9,740*l.* per square mile, still remains about the half of the average standard of 6*l.* 15*s.* per head.

Taking the amount of debt borne by the five Great Powers, we have the following result:—

Englishman's debt =	3	that of the Frenchman.
„ „ =	4	„ Spaniard.
„ „ =	8	„ Austrian.
„ „ =	19	„ Prussian.
„ „ =	20	„ Russian.
Spaniard's debt .... =	2	„ Russian.
„ „ =	2½	„ Austrian.
„ „ =	8½	„ Prussian.
Hamburger's debt =	4	„ Frenchman.
„ „ =	8	„ Austrian.
„ „ =	12	„ Bavarian.
„ „ =	15	„ Saxon.
„ „ =	18	„ Prussian.
„ „ =	19	„ Russian.
„ „ =	21	„ Turk.

*Revenues.*

The various European states in receipt of revenues may be divided into seven classes :—

I. Whose revenues do not exceed 2,500*l*.

San Marino

Lichtenstein.

II. Whose revenues are from 10,000*l*. to 100,000*l*.

Hohenzollern Sigmaringen

Hohenzollern Hechingen

Schwarzburg Rudolstadt

Saxe Coburg Gotha

Schwarzburg Sondershausen

Switzerland

Lippe Schaumburg

Waldeck

Lippe Detmold

Lübeck

Reuss

Anhalt Köthen

Frankfort

Hesse Homburg

Saxe Altenburg

Anhalt Bernburg.

III. Whose revenues are from 100,000*l*. to 2,500,000*l*.

Saxe Meiningen

Anhalt

Dessau

Saxe Weimar

Ionian Islands

Bremen

Modena

Oldenburg

Parma

Nassau

Mecklenburg Schwerin

Brunswick

Greece

Hamburgh

Hesse (Electorate)

Hesse (Grand Duchy)

Tuscany

Saxony

Württemberg

Hanover

Denmark

Sweden and Norway

Baden

Papal States

Portugal.

IV. Whose revenues are from 2,500,000*l*. to 5,000,000*l*.

Bavaria

Turkey

Sicily

Belgium

Sardinia.

V. Whose revenue is from 5,000,000*l*. to 10,000,000*l*.

Netherlands.

VI. Whose revenues are from 10,000,000*l*. to 50,000,000*l*.

Prussia

Russia

Austria

Spain.

VII. Whose revenues are over 50,000,000*l*.

Great Britain

France.

Taking the average rate of interest paid annually on the whole of the European debt to be at 4 per cent., it would require 70,131,125*l*. to cover annually the above interest, or nearly one-third of the whole of the annual revenues of Europe.

San Marino stands *lowest*, and France *highest*; England and France produce more than one-half of the whole European revenue; whilst that of Great Britain alone exceeds those of Prussia, Russia, and Austria combined; the five powers, Prussia, Russia, Austria, Great



Britain, and France, produce three-fourths of the whole European revenue.

Russia, whose territory is about thirty-three times the extent of Austria, has, nevertheless, 2,000,000*l.* less revenue; while Prussia, whose territory is but one-eightieth of that of the czar, has a revenue nearly equal.

*The Central States* of Europe possess a revenue amounting to 157,544,347*l.*, of which sum 54,426,976*l.* is required for interest on the national debt, being about one-third of their revenue.

*The Northern States* of Europe possess a revenue amounting to 17,116,852*l.*, of which sum 4,470,265*l.* is required for interest on the national debt, being about one-fourth of their revenue.

*The Southern States* of Europe possess a revenue amounting to 32,642,551*l.*, of which sum 11,217,884*l.* is required for interest on the national debt, one third of their revenue.

Of the total revenue of the European states, 53,386,293*l.* is derived from the republics, and 153,915,459*l.* (three-fourths of the whole) from the monarchies.

Of all the states, Spain appears to hold the worst position, as regards the amount of revenue to meet the interest of the national debt; and passing over the fact, that Spain promised at the time of contracting its debt to pay 6 or even 9 per cent. interest, I suppose that she pays 5 per cent., which would nearly consume the whole revenue.

With all the other European states, the case is different; even Hamburgh, with its vast amount of debt, does not require the third part of its revenue to cover its interest; France, again, only requires a fifth of its revenue to cover its annual interests; but Great Britain applies more than half its revenue to that purpose; Prussia stands at the head of this list, requiring only one-fourteenth part of its revenue to be so applied.

Taking the average rate of interest paid annually on the whole of the European debt to be at 4 per cent., it would require 70,131,125*l.* to cover annually the above interest, or nearly one-third of the whole annual revenue.

The following table gives the amount of debt and revenue of each state, in alphabetical order:—

STATES.	National Debt.	Revenue.
	£	£
Anhalt Bernburg.....	238,575	94,500
„ Dessau.....	174,550	100,753
„ Köthen .....	649,238	63,000
Austria .....	135,819,993	16,096,703
Baden .....	3,730,953	2,064,782
Belgium .....	24,118,721	4,704,490
Bavaria .....	10,529,242	2,644,701
Brunswick .....	1,420,419	299,151
Bremen .....	400,000	121,760
Denmark.....	12,317,406	1,200,657
Frankfort.....	576,838	76,748

STATES.	National Debt.	Revenue.
France .....	253,439,205	56,469,280
Great Britain .....	785,115,000	52,262,000
Greece .....	3,180,778	482,877
Hamburgh .....	5,156,250	518,432
Hanover .....	3,485,094	1,119,823
Hesse (Electorate) .....	246,395	647,123
„ (Grand Duchy) .....	458,333	649,630
„ (Homburg) .....	125,361	79,093
Hohenzollern Hechingen .....	32,000	16,000
„ Sigmaringen .....	8,333	18,000
Ionian Islands .....	154,450	120,236
Lichtenstein .....	...	2,200
Lippe Detmold .....	...	40,833
„ Schaumburg .....	...	32,250
Lübeck .....	343,061	47,078
Lucca .....	40,000	...
Marino (San) .....	...	1,300
Mecklenburg Schwerin .....	1,458,546	290,620
„ Strelitz .....	180,000	45,750
Modena .....	70,000	130,000
Nassau .....	125,000	259,119
Netherlands .....	99,825,593	5,735,385
Oldenburg .....	153,000	150,174
Papal States .....	12,397,888	2,088,491
Parma .....	153,600	240,000
Portugal .....	19,630,974	2,246,067
Prussia .....	24,429,217	14,126,157
Reuss .....	18,000	56,010
Russia .....	99,439,211	14,170,800
Saxony .....	3,452,563	869,797
Saxe Altenburg .....	185,137	84,212
Saxe Coburg-Gotha .....	380,855	21,218
Saxe Meiningen .....	355,786	100,648
Saxe Weimar .....	719,386	117,260
Sardinia .....	12,683,333	4,825,594
Schwarzburg Rudolstadt .....	9,993	20,833
„ Sondershausen .....	37,723	27,855
Sicily .....	18,261,333	4,348,166
Spain .....	204,274,749	10,817,158
Sweden .....	...	1,147,941
Norway .....	...	597,454
Switzerland .....	...	31,458
Tuscany .....	...	836,830
Turkey .....	10,000,000	3,000,000
Waldeck .....	90,000	37,500
Württemberg .....	3,186,058	905,817
Total .....	1,753,278,140	207,301,714



*A Statistical Account of Auckland, New Zealand, as it was observed during the year 1848. By ARTHUR S. THOMSON, M.D., Surgeon of the 58th Regiment.*

[Read before the Statistical Society of London, 17th February, 1851.]

AUCKLAND, the seat of the Colonial Government, is situated on the eastern side of the North Island, in south latitude  $36^{\circ} 51'$ , and east longitude  $174^{\circ} 45'$ , about fifty miles from the mouth of the Gulf of Hauraki.

The island at this place is but six miles broad; and at one point the seas on the eastern and western coasts are only three-quarters of a mile from each other, owing to the proximity of two navigable creeks.

The harbour of Auckland is deep and well protected, and the rise and fall of the tide average about nine feet.

#### *Situation of the Town.*

Auckland lies in a narrow valley formed by two hills, which rise abruptly from the sea to the height of seventy feet. The distance from the ridge of one hill to that of the other is less than half a mile; but this distance gradually lessens as the hills approach each other. The valley in which the town stands is, at one extremity, open to the water, and extends inwards and upwards about half a mile, till it is lost in the surrounding features.

The country on both sides of Auckland is made up of similar valleys, which afford some beautiful sites for the erection of houses. The soil is a soft, clayey, conglomerated sandstone, under which are beds of scoria ashes in some places. In the immediate vicinity of the town several dormant volcanic craters can be traced, around the bases of which are strewn large blocks of scoria. The highest and nearest to the town is Mount Eden (named after Lord Auckland), which rises about 500 feet above the level of the sea. Although the entrance to the harbour is picturesque, yet the aspect of the country around Auckland is not at present agreeable; the wood having all been destroyed, nothing meets the eye but dark ferns and short tea shrubs.

#### *Population of the Town and Settlements around.*

The presence of a regiment, a few artillery and sappers, with a considerable government and commissariat expenditure, have collected at Auckland a large town population. Many who came out to cultivate the soil, found that keeping a shop was a more lucrative concern. According to the census of 1848, the population of the different localities in the neighbourhood of the town\* is as follows:—

\* This census, to which I shall often refer, was made by Captain Atkyns, Inspector of the Armed Police, and published in the Government Gazette.

Localities.	Population.		Total.	Houses.				Total Houses.
	Males.	Females		Stone.	Brick.	Weather Boarded.	Raupo.	
Auckland .....	1,551	1,262	2,813	7	19	668	....	694
Suburbs .....	422	380	802	10	6	146	41	203
Remuera .....	67	39	106	....	....	5	17	22
Epsom .....	83	64	147	1	1	14	17	33
Three Kings .....	46	40	86	....	....	4	11	15
Onehunga .....	138	124	262	....	....	63	3	66
Otahuhu .....	151	146	297	....	....	2	72	74
Papakura .....	16	7	23	....	....	5	10	15
Howick .....	408	367	775	....	....	50	180	230
Panmure .....	187	147	334	....	....	5	99	104
Tamaki East .....	18	12	30	....	....	3	4	7
Tamaki West .....	134	76	210	1	....	22	27	50
Kawan Island .....	105	89	194	....	....	....	....	....
Barrier Island .....	13	9	22	....	....	....	....	....
Sawing Stations ...	624	278	902	....	....	....	....	....
	3,963	3,040	7,003	19	26	987	481	1,513

It will be observed that the whole European population in Auckland and the neighbouring localities is 7003 souls. Part of them came direct from Great Britain, but a large proportion are emigrants from different parts of New Zealand, or from some of the Australian colonies; among the latter are to be found several time-expired convicts.

The actual population of the town is 2813 persons, or 4 inhabitants for each house.

#### *Description of Auckland.*

The town is almost entirely built of wood. It will be seen from the foregoing table that in the town and suburbs there are 17 stone houses, 25 brick, 814 wood, and 41 huts constructed of a dry reed, called raupo (*Typha angustifolia*). The only stone or brick buildings of any size in the place are the military hospital, the commissariat stores, the Roman Catholic, Wesleyan, and Protestant churches, and a few merchants' stores. Other stone and brick buildings are, however, rapidly springing up. The principal streets in the town are Shortland Crescent (named after the former Colonial Secretary), Queen's Street, and Princes Street: the first extends down the hill, the second is at right angles to it at the bottom of the valley; Princes Street is on the ridge of the hill, and may be called the Bond Street of the settlement. In Princes Street the Bank is the only brick building; in Queen's Street there is only one stone building.

There are two very good hotels, (the Exchange and Masonic,) and many others equally respectable, but not so well got up. Although the climate is not hot, most of the dwelling-houses have small verandahs round them. A great proportion of the houses are only one story high; but in Shortland Crescent several are of two stories. The chimneys of all the wooden houses are built of brick. The style of the buildings is more useful than ornamental—a remark equally ap-



plicable to the interior and furniture. The ventilation and drainage of the town is not attended to at all, and the slaughter-houses are placed in bad situations.

The wood chiefly used for building is the Kauri pine (*Dummaro Australis*), which grows only in the north part of the island. All the stone houses are built of roughly-hewn scoria blocks, found at the base of the volcanic hills in the neighbourhood. Much of this stone is porous; the specific gravity of several specimens I tried was 2.11, water being as 1. Houses built with it are said to be damp. A good sandstone has, however, been found about forty miles from Auckland, and a flour-mill is at present being built with it. Bricks are easily made from the clay soil on which the town stands; they cost at present 50s. per thousand, and are very bad. The lime now supplied for building is got from burning oyster-shells, an immense quantity of which are found on the coast; but a limestone containing a good quantity of magnesia has been found near the harbour, and is at present under trial.

During the year 1848 the government house, a wooden building situated at the top of Princes Street, in a small park, was accidentally destroyed by fire; the house had been sent out from England for the first Governor. The present Governor lives in a scoria house, at the top of the valley in which the town stands, and where the two hills unite.

Although Auckland has had two naval Governors, there has been no attempt at the formation of a pier as yet; but plans and estimates for this useful object have, I believe, been lately sent home. The town is not lighted at night. House rent is high; 65*l.* per annum being given for a wooden house of four small rooms. To afford some idea how all stations in life are mixed up, I may mention that at the top of Princes Street lives the Lieut.-Governor in a low wooden house; immediately behind him live a cabinet maker and a man who keeps cows; on the right and left of them live two officers of the regiment at this station. The Lieut.-Governor's residence was formerly a public-house, and even now you can trace over one of the doors, in large letters, almost entirely defaced by a coat of paint, the words "tap room." I shall now say a word explanatory of the places in the neighbourhood of the town.

*Remuera* is the native name of a piece of land at the base of Mount Hobson, which contains a few agricultural inhabitants; it is about a mile from Auckland, on the Onehunga road. A mile and a half farther on we come to

*Epsom*, so named from its race-course, which is on an extensive level between two volcanic hills. About two and a half miles beyond this we reach the pensioners' village of

*Onehunga*. This military settlement was formed in the latter part of 1847, and already contains 63 weather-boarded wooden houses. The village is the head quarters of the 1st division of the Royal New Zealand Fencibles, and lies about five miles from Auckland, on the western coast, at the harbour of Manukau. It may, in future years, become a great town; for although the harbour is at present reckoned unsafe, the survey now going on may discover a safe passage for shipping; and even without this result, should steam ever connect

Auckland with Sydney, vessels will, if possible, come to Manukau, as it saves a long passage round the north cape. The pensioners' acres and several farms in the neighbourhood are in a good state of cultivation. A two-horse coach, called the Red Rover, commenced running between Auckland and Onehunga during 1848—fares 2s. 6d.

*Otahuhu* is the head quarters of the 6th division of the Fencibles. It is about eight miles from Auckland, by a direct road which leads into the Waikatto country. Few of the pensioners' houses are finished, although all are commenced. The village is about five miles from Onehunga, and is already a thriving settlement, though the first houses were only built in 1848.

*Panmure* (so named after the title of the father of the present Secretary at War) is most picturesquely situated on the west bank of the Tamaki, a deep, navigable, tortuous salt-water creek, which extends from the harbour of Auckland to within three-quarters of a mile of the Manukau harbour on the western coast. It is the settlement of the 5th division of the Fencibles, is about seven miles from Auckland, and almost all the houses are now finished. Panmure is three miles from Otahuhu. I came out to New Zealand as Medical Superintendent of the division of pensioners settled here. They embarked from Galway in August, 1847, and were all Irish. The present comfortable state of the men, women, and children of this division in their beautiful village is a strong contrast to the half-starved and sickly appearance they had on leaving Ireland; and it often has suggested to me the following question—As a matter of economy, why are not the really poor of Great Britain and Ireland sent out to some of the colonies, where they can be provided for, and be a benefit to the colony, in place of keeping them shut up at home in poor-houses, useless to themselves, and a burthen on the nation? The ground at Panmure is very good. One pensioner told me he had got forty-seven potatoes, of excellent quality and good size, from one stalk, by simply digging the ground after the removal of the native fern.

*Howick* (so called after the present Colonial Secretary, Earl Grey) is the last and most distant pensioner settlement; thirteen miles from Auckland, and four from Panmure. It lies on the eastern side of the Tamaki creek, over which a cart ferry-boat is established for the conveyance of the pensioners. Here are quartered three divisions or companies of the Fencibles, and two officers, with the Surgeon. The distance from Auckland has been much complained of by the men, though the water communication is easy; and considerable dissatisfaction existed also at first on account of the supposed inferiority of the soil, which is principally a strong tenacious clay\*.

*The Three Kings* are hills, four miles to the south of the town. The Wesleyan chapel and school are situated in this district.

\* Military colonization has been several times tried, but with doubtful success. In New Zealand it has been successful, but it has been an expensive measure for the Government at the outset. The cheapest plan for military colonization is, to afford every facility and encouragement to good soldiers belonging to regiments serving in the colonies to settle there after the departure of the corps. It is useless, so far as security goes, retaining the men in villages; the monthly payment of a pension, however small, keeps them always well in hand. The Ten Year Enlistment Bill goes far to accomplish the object of retaining soldiers in the colonies after their discharge.



*Papakura* is distant twenty miles from Auckland, on the Wai-katto road, with a water communication from Onehunga. It is a cattle station, and the most distant settlement in this direction.

*East Tamaki* is on the east bank of the creek, close to the pensioner settlement of Howick, which has caused considerable increase in the price of land. There are some good farms here.

*West Tamaki* is on the opposite bank, and is a beautiful district for agriculture. The population is 210, and there is much good land and good farms.

*Kawau Island* is placed in the Gulf of Hauraki, thirty miles from Auckland. The 105 male population are employed in the copper-ore mine. The company is a Scotch one, and already 20,000*l.* have been expended on the works.

*Barrier Island* is at the mouth of the gulf. The inhabitants are chiefly wood-cutters or ship-builders. Last year the *Stirlingshire*, 500 tons burden, was launched from this island.

*Saving Stations.* There are 624 people so employed. The principal places are Mahurangi, Waugari, and Matakau.

The native population in the town of Auckland is not great; those who live there are, to the number of 300 or 400, chiefly employed on the roads or the public works. In the vicinity of the town are many natives, who often resort to it in canoes or on foot, with articles for sale. On several occasions I counted the number of natives I met in Shortland Crescent, and found them to exceed 40.

### *Employment of the People.*

During the year 1848 any person in Auckland, able and willing to work, could have got employment. According to the census\* of 1848, there were 190 professionals and officials, 115 farmers, 207 merchants and traders, 486 mechanics and artisans, 210 farm servants, 206 domestic servants, and 204 labourers, boatmen, &c. This list includes all the settlements.

To give another idea of the employment of the people during the year 1848, I may mention that of 715 men returned by the magistrates as fit to serve on juries for the year 1849†, there were farmers 91, carpenters 80, labourers 80, settlers 51, dealers 49, shoemakers 23, publicans 18, tailors 19, blacksmiths 15, stonemasons 14, butchers 13, bakers 12, clerks 11, cabinet makers 11, merchants 10, painters 10, grocers 10, carters 10, sawyers 9, esquires 9, gentlemen 6, baron 1, boat builders 5, boatmen 7, dentists 2, chemists 2, builders 4, schoolmasters 6, students 2, architects 2, timber merchants 4, wheelwrights 3, printers 7, bricklayers 4, drapers 6, auctioneers 4, veterinary surgeon 1, wine merchants 2, accountants 3, brewers 5, millers 3, saddlers 2, coopers 2, land surveyor 1, confectioner 1, watermen 3, dairymen 2, watchmakers 2, bookbinder 1, mariners 5, chandlers 2, sailmaker 1, lime burner 1, shipwright 1, &c.

It will be observed from this list that Auckland has a member of almost every trade, with the exception of those which only exist in large towns. From the class of farmers, carpenters, and labourers,

\* Government Gazette, 1849.

† The nominal list from which this was compiled is published in the Government Gazette for 1849.

the most useful and numerous in this list, most of the jurymen are taken. There is not one person in the town or suburbs who can be called an independent gentleman—that is, a man living on his fortune.

*Wages given for Labour.* A house-carpenter gets 8s. 6d. a-day, a labourer from 3s. to 3s. 6d., a brickmaker 5s., a stonemason 7s. 6d., ship-carpenter 10s., smith 7s. 6d., shoemaker 5s., journeyman tailor 7s. 6d., journeyman baker 4s., painter 4s. 6d.

Few of the natives are employed as private servants; a circumstance which arises from the want of knowledge of the native language among the settlers. The natives employed on the roads and government works receive at the rate of 1s. 6d. a-day, part of which is given in food. There are several among them who have learned to build and to face stones, and who earn from 2s. to 3s. 6d. a-day.

*Manners and Morals.* The town is not yet sufficiently old to have given birth to any marked peculiarity of manner in the inhabitants. Like all emigrants, they may be said to be distinguished for energy and reflection, and, as a whole, are better informed and more “men of the world” than the population of a similar sized town in any part of England.

Among the trades the desire to accumulate money is the ruling passion; and with some of them this is so strong, that they have forgotten that an emigrant does not generally adopt a new country to make money, but to live, and that chiefly by the cultivation of the soil. As a body, they are liberal in their ideas, and also in religious matters. On Sunday the churches are all well filled, and good clothes indicate their easy circumstances. Their taste for music, or books, or the fine arts, cannot be considered very high; but they are disposed to be charitable, as was shown by the large voluntary subscription collected for the inhabitants of Wellington who had suffered from the earthquake. The liberality in this case was more to be admired, because there is little community of thought or feeling between the two places. During the war in the north part of New Zealand, the inhabitants raised a militia, and several of them served with distinction in some of the engagements.

*Diet.* The food of the people is chiefly pork (New Zealand venison). In the public houses, beer, gin, whiskey, and brandy are the usual beverages; rum is seldom made use of. There is no drink peculiar to the town, but ginger-beer with brandy is called a “stone fence,” and is a favourite mixture; this term has come from Sydney. The best part of the population, as regards their manners, are the agriculturists; indeed, they are the only colonists in the true spirit of that word.

The people of Wellington consider Auckland as a town existing and flourishing on the military expenditure. There can be no doubt that it has advanced greatly from this cause; but even if the military were withdrawn, the town would increase, although perhaps more slowly than hitherto. To withdraw the troops, however, would place the town at the mercy of the Waikatto natives. When the news of gold having been found in abundance in California, reached Auckland, a ship with a good many speculators, in the hope of immediate wealth, left health and comparative comfort for the chance of sickness and starvation; and since then there has been considerable emigration from the colony to the same quarter.



Law may be described as a kind of civil warfare, so that the number of cases tried is generally a very good index of the peaceable or pugnacious character of the people; during the thirteen months ending 31st December, 1847, 154 cases were tried, and 99 convicted; 65 natives had verdicts given to them, and the Europeans had 19. The remaining 60 cases were between Europeans.

The morality of a people is best estimated by a reference to the amount of crime among them. During the thirteen months ending the 13th December, 1847, 1,083 cases were tried before the resident magistrates' court, of which 86 were between Europeans and natives, the natives were defendants in 34, and the Europeans in 52 cases. Three cases only occurred in which both parties were natives, and the remaining 994 cases were confined to Europeans. As 117 cases were dismissed, the number of convictions is reduced to 857, of these 25 were for assault, 15 for breaches of the peace, 155 for breaches of the cattle trespass ordinance, 25 for larceny, 5 for malicious injury to property, 26 for breaches of the Merchant Seaman's Act, 2 for profane swearing, 5 for vagrancy, and 529 for drunkenness; one European was hung during the year for the murder of a retired officer of the Royal Navy, who lived at the flag-staff, on the north shore. The murder was of such a nature, and perpetrated with so much barbarity, that for many months the natives had the credit of doing it; but at last it came to light, by the confession of a woman, that a European sailor had committed the deed, and he was hung at the place where the murder was perpetrated, in the presence of many natives and Europeans. During the year 1848, 447 Europeans were committed to jail, being one out of every 15 of the whole population; of these 20 were military.

It will be seen from the return of crimes, that one-sixth part of the population had something to do with a court of justice in the course of the year, and that the great and crying vice is intemperance, as might be expected when money is abundant, and a gill of spirits costs only sixpence; indeed, the trade of a publican is one of the most lucrative in the town, so much so that there were 45 applicants for licenses to sell spirits during the year 1849, being one public house to every 63 persons, male and female, above 21 years of age. Poverty, that great exciting cause of crime, is unknown here, and property is exposed with a degree of security which would astonish the Englishman, who double-bars his door on retiring to rest.

During the year 1843, a number of reformed Parkhurst boys were sent out to Auckland, and although they did not form one twentieth part of the population, the cases of felony were doubled next year, and the excess was entirely owing to these young reprobates.

*Places for Instruction.* There is a college under the superintendence of the English Church, called St. John's. It was founded in 1842, and is situated six miles from Auckland, in the west Tamaki district. The building is constructed partly of scoria stone, but principally of wood. The number of houses, with the chapel and the hospital about the place, give it a very respectable appearance. There is a considerable quantity of land (1300 acres,) belonging to the institution. St. John's College is chiefly designed for candidates for holy orders, but it is open to other students. The expense of tuition, commons and attendance, does not exceed 30*l.* per annum.

There are already six small scholarships in the gift of the visitors. Schools also are attached to the college for the instruction of European and native boys; to the former the expense does not exceed 25*l.* per annum, for the natives no charge is made; they are clothed, fed, and taught English, writing, arithmetic, and singing, with some useful trade. The number of native boys at the school last year was 33. There are 14 persons now officiating in different parts of New Zealand who have been ordained by the bishop since his arrival in the country. In the town are several schools for the instruction of boys and girls, but none of them have a great reputation, and a well-instructed teacher would be an advantage to the place. The Wesleyan body are erecting a school for the education of the children of their missionaries in this country.

The Government expended, during the year 1848, 3,466*l.* on education. This sum was altogether spent on the natives. The Government plan of educating the natives is a wise and liberal one. It consists in giving to the church missionaries, the Wesleyans and the Roman Catholics, a sum of money to build native schools, with this provision, that they instruct a certain number of children. Already the Wesleyan body have built a school four miles from town, and are educating upwards of 100 natives. The Roman Catholic body are erecting a school on the north shore, for a similar purpose. This is a much less expensive, and also a better plan than establishing normal schools, for this reason, that these religious denominations have already the machinery for education in force. Some people may object to it as exhibiting too great latitude of religious principle, but it is in the spirit of the age, and by making use of these bodies, the instruction is at once brought into operation without loss of time.

*Establishments of Justice.* There is a supreme court, with powers similar to those of corresponding courts in England, also a resident magistrates' court which meets daily for the trial of all offences. Last year the expense of the supreme court was 1,360*l.* 14*s.*

*Police Establishment.* For the protection of the peace of the town and surrounding districts, a police force is kept up, consisting of 6 Europeans and 19 natives, who are instructed in the carbine exercise; the natives are found to be as faithful and trustworthy in the discharge of their duty, as the European part of the police; both receive 25*s.* a-week. It will be seen on reference to the expenditure return, that the police establishment, with the resident magistrates' court, cost 3,801*l.* 10*s.* 1*d.* last year. The police are distinguished from the people by a neat, comfortable, and cheap dress, consisting of a blue woollen shirt, with a leather strap round the waist, and a cap.

*Places for Interment.* Although the inhabitants are liberal in their religious ideas, yet we find the Church of England, the Church of Scotland, the Wesleyans, the Jews, and the Roman Catholics, have each their separate cemeteries. All are situated on the ridge of the hill, about half a mile from the town. The Church of England has the largest grave-yard, picturesquely situated in a ravine. On the opposite side of the public road, uninclosed, with about twenty wooden tombstones (if I may use the term), stand the cemeteries of the Scotch and the Wesleyans; close to the last, but carefully inclosed, is that of the Jews; a short distance apart from all, is the resting



place of the Roman Catholics, distinguished from the others by a large wooden cross. I have read the inscriptions on all the frail pieces of wood, which stand in place of tombstones, and on a great number of them, reference is made to that part of Great Britain from which the deceased came; unless over the graves of children, the death is mentioned without much apparent grief, a circumstance attributable to the absence of blood relations. In almost all the inscriptions, the names recorded are "unknown to fame," if I except that of Captain Hobson, over whose sepulchre there is a large flat stone, with this inscription, "Sacred to the memory of William Hobson, Esq., Captain in her Majesty's Royal Navy, first Governor of New Zealand, who died at Auckland on the 10th day of September, 1842, aged 49 years."

*The Gaol* is a wooden building of one story, situated behind the court house, in the centre of Queen's Street, and at the lowest part of the town. In 1848, there passed through the gaol 455 prisoners, of whom 447 were Europeans, and 8 were natives. The average daily number of prisoners was 34, and as two deaths occurred, this gives the high ratio of mortality among them, of nearly six per cent. during the year. The average number of days each prisoner was confined was 27. There are three scales of diet—the first for prisoners in solitary confinement, the second is the ordinary ration, and the third is only given when ordered by the visiting magistrate, or the sheriff.

*Scale of Rations in the Gaol.*

Scale.	Vegetables.	Meat.	Bread.	Soap.	Salt.
No.	Ounces.	Ounces.	Ounces.	Ounces.	Ounces.
1	....	....	24	....	....
2	8	4	24	$\frac{1}{4}$	$\frac{1}{2}$
3	8	12	20	$\frac{1}{4}$	$\frac{1}{2}$

I have had no opportunity of testing the efficacy of the first scale; but from some observations I made on the military prisoners, I found that at hard labour they increased in weight on the second, when not kept too long in confinement. The hard labour consists in working on the roads.

*Military Establishment.* The garrison consists of the head-quarters and 581 men of the 58th Regiment, 15 men of the Royal Artillery, and 13 of the Royal Sappers and Miners. All the barracks are of wood; but the military hospital, the commissariat, and ordnance stores, are of scoria stone. The barracks are situated on the ridge of the hill, immediately above the town; the barrack square includes a space of 23 acres, surrounded by a scoria stone wall from 15 to 20 feet high, loopholed, with flanking angles. This large extent of ground was inclosed as a place of retreat for the inhabitants in case of hostilities. The wall is not yet finished; it has been built entirely by the natives, under the superintendence of the officer commanding the Royal Engineers. The front of one of the hills jutting into the harbour is separated by a ditch and a wall, and is named Fort Britomart, after a ship of war of that name which once visited Auckland. Here the ordnance

stores are kept, and a few guns are mounted facing the harbour. The natives are much struck on visiting Auckland by the sight of the military; and many of them every Sunday accompany the band from the barracks to the church. The number of women and children belonging to the regiment was 233.

*Post-office.* This is a small establishment: the Collector of Customs acts as Postmaster. There is little communication between Auckland and the other parts of New Zealand. The average length of the voyage from Sydney to Auckland is fourteen days—to Wellington, about seven. The mail to Sydney is conveyed by vessels trading between these places. The average course of post from England, *viâ* Sydney, to Auckland is four months and a half. There is an overland mail to Wellington twice a month. The sea postage of a letter under half an ounce, not intended to pass through the United Kingdom, is 4*d*. During the year 1848, the revenue of the post office exceeded the expenditure by 287*l*. 12*s*. 7*d*.; the revenue being 881*l*. 3*s*. 1*d*.—the expenditure 593*l*. 10*s*. 6*d*.

*Amusements.* A theatre was opened during 1848, and several pieces were acted. The desire for the drama among the inhabitants is apparent from the crowded state of the military theatre; but the theatre in the town did not succeed, and the temple of Thespis has now degenerated into two shops. In this case the failure is to be attributed more to bad acting and the want of regularity in the theatre than to the absence of public support. There is a musical club, a book club, a circulating library, a reading room, a cricket club, a mechanic's institute, and also a bookseller's shop in the town.

The military band plays once a week in the garden where the government house stood. There are three billiard tables in the town. A race meeting takes place in January every year, on the anniversary of the foundation of the colony. In 1849, the number of entries were 56 for 10 races. The highest purse was 25 sovereigns, and the entrance 3*l*. Four very good horses appeared. The races continued for two days. The greatest speed was at the rate of a mile in two minutes.

*Newspapers.* Two papers are published; one twice a week (the *New Zealander*), and the other (the *Southern Cross*) once a week: both have been in existence for some years. The first is a kind of milk-and-water supporter of Government, and the last is the detractor; for the inhabitants of Auckland, like all colonies, are divided into two classes—those who praise everything done by the Governor, and who on all occasions avoid the expression of dissatisfaction, and those again who will not admit that he can do right, but see wrong in every measure he undertakes. The price of a copy of either is 6*d*., though the paper is only the size of the first and second pages of the *Times* doubled.

During 1848 the Government commenced a paper published in English and the native language, to appear twice a month; its object is to diffuse useful information among the natives; it is distributed without payment, and is a wise and powerful instrument for good.

During the year 1848, with the exception of the *Auckland Sheet Almanack* and the *Government Gazette*, which is published as necessity requires, no other publication was printed in the town. A *New Zealand quarterly magazine* was advertised, if a proper number of sub-



scribers appeared; but they have apparently not done so, as it has not yet been published.

*Industrial Establishments.* There is a rope-walk for the conversion of New Zealand flax into rope; and a factory is erecting for the cleaning of native flax for exportation. The New Zealand rope was tried on board a ship of war, and found very good. A proper method of cleaning the flax from all its impurities is still a great desideratum. At present a vessel of 300 tons is building in Mechanics' Bay, and several smaller craft for the coasting trade.

There are a tanyard and numerous brickfields. The copper ore mine in the Island of Kawau employs 105 Europeans. During the last year very little ore was got out, as the men were chiefly employed in erecting smelting works. Already the company have spent 20,000*l.* on the works. From the Barrier Island last year a 500-ton vessel was launched. There are three brewing establishments in the place.

*Charitable Establishments.* During the year 1848, 163*l.* 14*s.* 6*d.*, was expended by Government for the town of Auckland, in aid of the relief of the sick and destitute, although there are no poor unless the sick and old who are unable to labour. In 1847 an hospital was established for the use of the Europeans and natives; the former are charged 1*s.* 6*d.* a-day for residence and treatment when they can afford it, and when unable to pay are admitted as paupers. During 1848, 118 Europeans were admitted, and 14 died; of the natives, 158 were admitted, and 8 died. The natives are mixed up with the Europeans in the wards, and are charged nothing for residence or treatment. The hospital is a Gothic wooden building, erected on a high and healthy situation, about a mile from the town. The style of the building is more ornamental than useful, because there are so many holes and corners for dirt to lodge. A surgeon and assistant surgeon are attached to the hospital and the colony.

*Roads.* Much expense is incurred in making roads, and keeping them in repair, in the town and districts around Auckland, owing to the soft, clayey nature of the soil in some places, and the moisture of the climate. The scoria stone found at the base of the volcanic hills in the neighbourhood, and the beds of ashes occasionally got under the superficial strata are excellent materials for road-making. The streets in the town were in such a bad state last winter, that the commissariat cart was often unable to bring water from the spring in Official Bay to the barracks, a distance of a quarter of a mile. Roads are completed in several directions around the town, to the distance of six and twelve miles. During 1848 the expenditure for road-making was 9,704*l.* 10*s.* 8*d.*

*Professional Men.* Although in the government census 190 men are returned as "professional or official," yet most of them are either government servants or small clerks. In the town 1 barrister and 5 attorneys are in practice, and 6 of the medical profession; but there are also several of these professions who, being embarked in other pursuits, do not practise.

*Price of Land.* At the public sale of government land, on the 1st March, 1849, 13 acres 2 roods and 28 perches, in a street called Wakefield Street, a continuation of Queen's Street, and in some neighbouring streets, were sold in small allotments, and the sum

realized was 1,567*l.* 15*s.*\*, which is at the rate of 100*l.* an acre. At the same sale 49 suburban acres of land were sold for 346*l.* 16*s.* 4*d.*; and in the same Gazette, land, a few miles from Auckland, is advertised by the Government in allotments, varying from 83 to 100 acres, at an average price of about 2*l.* an acre. No government land in New Zealand can be sold for less than 1*l.* an acre,—a sum said to be necessary to defray the expense of surveying the land and making roads, and for raising a fund to assist in bringing emigrants from the mother country; but among well-informed and unprejudiced persons it is generally considered too much. If, however, land were too much reduced in price, it would give rise to a set of land jobbers,—a class of men of no use, and often very hurtful to a colony.

During the year 1848, 2,143*l.* 14*s.* was realized from the sale of crown lands. No European can now purchase land from a native: all native lands must first be purchased by the Crown, and then re-sold. In 1848, the land purchased by the Crown amounted in money to 825*l.* 10*s.* 11*d.*

*Supplies to the Town.* The market is well supplied, both by Europeans and natives, with pigs, potatoes, firewood, and fruit. Beef, mutton, and butter are as yet only furnished by the European farmers. The native race will be strong rivals in trade to the Europeans, as they can produce articles cheaper; and every day the supplies are increasing both in quality and quantity. To give an idea of the price of some of the most useful articles of life, I may mention that the 58th regimental hospital, during 1848, was supplied by contract with the undermentioned articles at the prices named:—fresh beef or mutton, of the best quality, 5 $\frac{3}{8}$ *d.* per lb., first bread 2 $\frac{1}{4}$ *d.*, flour 2 $\frac{1}{2}$ *d.* per lb., potatoes 1*d.* per lb., milk 3 $\frac{1}{2}$ *d.* per pint, eggs 2*s.* per dozen, fowls 2*s.* each; pork can be had at 4*d.* per lb., and butter costs 2*s.* 6*d.* per lb. Firewood 6*s.* per ton.

In the contract for 1849 bread has fallen a farthing per pound, flour a halfpenny, potatoes a farthing per pound, milk a halfpenny per pint. Water is not very abundant, but is of good quality, has a pleasant taste, and can easily be obtained by sinking wells in proper places.

*Revenue and Expenditure.* I refer to the appendix, in which it will be seen that the revenue for the year 1848 was 53,108*l.* 16*s.* 5*d.*, and the expenditure for the same period was 48,479*l.* 2*s.* 8*d.* The particular source from which this large sum of money was derived, and how it was laid out, will be seen in the appendix, which has been compiled from the Quarterly Returns published in the Government Gazette. I may mention that a considerable part of the revenue is paid by the natives from the large quantity of tobacco and other goods which they purchase and consume.

*Commerce.* There are no harbour dues in the port of Auckland, and a pilot is not paid unless he is employed. Horses, cattle, books, bullion are admitted duty free. The *imports* consist of spirits, tobacco, and almost every other article required by civilized man. Upon spirits there is a duty of 5*s.* per gallon, on tobacco from 9*d.* to 2*s.* per pound; and upon almost all other articles there is an *ad valorem*

\* Government Gazette, March 1849.



duty of 12 per cent. The value of the imports for 1848\* was 120,343*l.*: 101 ships arrived during the year, being in tonnage 24,338, and manned by 1386 sailors; of the above shipping, 8 were from Great Britain, 85 from British colonies, 2 from the United States, and 6 from foreign countries†.

The trade in the importation of cattle and horses from New South Wales is active, and they are now cheap‡. The duty on gunpowder and fire-arms is 30 per cent.; on wine, &c., 20; beer, cider, &c., 15 on their value. No guns, powder, or spirits can be sold to the natives.

*The Exports* from Auckland during the year 1848 were valued at 18,977*l.*§ There is no duty on exports; so that there is no obstruction to free trade in this respect. From a return published in the *Gazette*, it appears that the exports in 1846 were valued at 40,187*l.*; the decrease in 1848 is caused by the small export of copper ore, arising from it having been found that the ore became heated on board of ship, and it is now retained for the purpose of being smelted, by works at present in the course of erection at the Kawau mines. The articles exported in 1848, were 5,949*l.* worth of sawn timber, 1,695*l.* of spars, upwards of 4,000*l.* of oil, 421*l.* of sheep's wool, 668*l.* of rope, 500*l.* of copper ore, and 270*l.* of flax. The decrease in the exportation of flax arises from the quantity used in making ropes. Kauri gum, 395*l.* This article has decreased since 1845, chiefly from its commercial value at first having been over estimated. Some years must elapse before the exports are of much value. New Zealand, from what I have seen of it, is an agricultural country, where a small farmer may settle, have health, and enjoy all the necessaries of life, but will not make money. It is a country for the emigration of small agriculturalists, not speculators. It is idle, however, to talk of what sources of wealth may be developed in New Zealand in the course of years by careful inquiry. There are no ships belonging to the port with the exception of three small traders between Sydney and Auckland. The number of small coasting vessels daily arriving with produce is great. In the month of March, 1849, twenty-five small craft, from 10 to 30 tons, are reported to have arrived||.

*Immigration and Emigration.* During the year 1848, 1430 immigrants arrived at Auckland, 632 of them were from Great Britain, and the remainder chiefly from the Australian colonies: 604 of the British immigrants were New Zealand pensioners and their families, sent out by the Government. As the emigrants from Auckland during 1848, (chiefly the sailors of ships first entered as immigrants on their arrival,) were 372, it follows that the total immigration for 1848, was 1066, of which 462 paid their own passage. The proximity of New Zealand to the penal settlement of Van Diemens Land, will always induce a large number of emancipated convicts to settle in this country, and there is scarcely a vessel which arrives from Hobart Town, but has on board some of these people. During the quarter ending March, 1849, 58 settlers arrived from Van Diemens Land. For men who

\* Government Gazette, 1849.

† November Gazette.

‡ For the quarter ending March, 1849, 405 head of horned cattle arrived, 226 horses, and 800 sheep.

§ Government Gazette, 1849.

|| Government Gazette, 1849.

have come to the determination to live honestly, New Zealand will do well, but for many years it will not be a sufficiently large place for the thief or the pickpocket part of the Van Diemens Land people to flourish.

*Vital Statistics.* The following table will show the number of the European population, at different periods of life in Auckland, and in the pensioners' villages and rural districts around, for the year 1848.

MALES.							FEMALES.							TOTAL.	
Under 2 years.	From 2 to 7.	From 7 to 14.	From 14 to 21.	From 21 to 45.	From 45 to 60.	60 and upwards.	Under 2 years.	From 2 to 7.	From 7 to 14.	From 14 to 21.	From 21 to 45.	From 45 to 60.	60 and upwards.	Males.	Females.
239	547	448	268	1,553	158	8	237	541	414	327	1,041	96	8	3,963	3,040

The number of males and females, it will be observed, are very even for a new colony. In New Zealand a deficiency of the female part of the population is not such an evil as in other settlements, because the New Zealand native women are pleasing and attractive, and they are both ready and gratified at forming an alliance with respectable Europeans; over the whole country it is estimated there are about two thousand half-caste children. The marriage of Europeans with natives is a union which ought to be encouraged; it amalgamates the races, and the offspring produced is a fine race.

It will be seen in the above table, that there are 1984 males above puberty, of whom 1129 are married, and there are 1472 females, of whom 1117 are married. During 1848, 194 children were born, and 47 marriages were celebrated\*.

*History of the Town.* The site of Auckland was chosen by Captain Hobson, R. N., in 1841. He was the first Governor of New Zealand, and his name will be long celebrated in the annals of the country, from the part he acted in the celebrated treaty of Waitangi, which treaty ceded the "Shadow of the land" to Queen Victoria: he died at Auckland, in 1842. The situation of the town is good, owing to its easy means of communication, by numerous creeks and rivers, with other and distant parts of the country; its well-protected and deep harbour; and the large native population in the neighbourhood. Mr. Shortland, the late Colonial Secretary, acted as Governor until the arrival of the second Governor, Captain Fitzroy, R.N., in December, 1843; who in turn was succeeded in December, 1845, by the present Governor-in-Chief, Sir George Grey, K.C.B. No earthquake has been felt within a hundred miles of Auckland, since the settlement of the town. During the latter months of the year 1847, influenza appeared as an epidemic, and prevailed all over the island, attacking the native as well as the European inhabitants. In April, 1848, scarlet fever

\* The rate of mortality is hereafter referred to.



appeared in Auckland, (the first time it was seen in New Zealand,) and in the town and suburbs attacked 146 persons, of whom 18 died. Although this disease appeared at Sydney much about the same time, yet I could not find, after careful enquiry, any facts to prove that it was introduced by importation. Some of the native race in the town were attacked, proving their susceptibility to this malady. The disease has apparently established itself, as several cases have occurred in April, 1849.

*Climate of Auckland.* The situation of Auckland on a narrow neck of land, between two seas, gives it a truly insular climate, and one which differs perhaps from a great part of New Zealand. The chief constituents of the climate of any place are the temperature, the moisture of the atmosphere, the pressure of the air, and the prevailing winds. These four elements I shall briefly state, so far as I can produce accurate materials. The subjoined table will show the mean monthly temperature of the years 1841\*, and 1848†.

Months.				1841.	1848.	Average Temperature of both Years.
Summer	January, corresponding to	July in Europe....		69	72	70
	February,                    ,,	August   ,, ....		67	66	66
Autumn	March,                       ,,	September   ,, ....		65	69	67
	April,                       ,,	October   ,, ....		59	66	62
	May,                         ,,	November   ,, ....		56	56	56
Winter	June,                       ,,	December   ,, ....		52	54	53
	July,                        ,,	January   ,, ....		49	54	51
	August,                   ,,	February   ,, ....		54	51	52
Spring	September,               ,,	March   ,, ....		54	51	52
	October,                   ,,	April   ,, ....		58	57	57
	November                 ,,	May   ,, ....		58	62	60
	December                 ,,	June   ,, ....		64	66	65
				59	60	59½

The mean temperature of Auckland, during the year, may be registered as 60° Fah.; the mean temperature of the summer months as 67°, of the winter as 52°. The difference of heat between winter and summer, is 15°. The highest temperature which occurred in 1848, was 80° Fah., the lowest 34°, so that neither snow nor ice were seen during the year. As it is only, however, by comparison, that a correct idea can be formed of the temperature of a place, I insert the following table, showing the mean temperature of a few places in the northern hemisphere‡.

\* Kept by Dr. Johnson, Colonial Surgeon.

† Kept by myself.

‡ The temperature of the places in the northern hemisphere are quoted from the Metropolitan Encyclopædia.

Places.	Latitude.	Mean Temperature.			Range.
		During the Year.	Of the Warmest Month.	Of the Coldest Month.	
Auckland, New Zealand*....	36-51 South	59½	70	51	19
Madeira† .....	32-37 North	68	74	63	11
Rome.....	41-53 „	60	77	42	35
Montpelier .....	43-36 „	59	78	42	36
London .....	51-30 „	50	64	37	27
Dublin .....	53-21 „	49	61	35	26
Edinburgh.....	55-57 „	47	59	38	21

Rome and Montpelier have, it appears, a similar mean temperature to Auckland, and the even nature of the climate is well shown by the above table. Although Madeira has a less range of heat during the year than Auckland, it is the opinion of Humboldt, (which, however, is contradicted by Captains Scourby and Widdel,) that the heat of the southern hemisphere is about 10° less than the north; but the temperature of Auckland, as given in the above years, does not confirm this. Hobart Town in south latitude 42° 52', has a mean temperature of 57° Fah. The temperature of the sea in the harbour of Auckland was similar to the air, and also that of a spring which issued from the ground. The highest temperature, on exposing a thermometer to the sun's rays, in 1848, was 114°. The average daily range of the thermometer, during 1848, was 12½°.

*Quantity of rain, and moisture of the atmosphere.* The following table will show the quantity of rain which fell at Auckland, during the year 1844‡, and the number of days on which rain fell, during the year 1848§.

Months.	Quantity of Rain in 1844.		Number of Days which Rain fell during 1848.
	Inches.	100th of an Inch.	
January .....	....	36	12
February .....	1	20	10
March .....	1	55	5
April .....	4	49	11
May .....	1	97	22
June .....	3	10	17
July .....	4	82	15
August .....	2	50	16
September .....	3	70	23
October .....	5	50	15
November .....	1	64	16
December .....	....	84	5
	30	64	167

\* Two years' observation, 1841 and 1842.

† Penny Encyclopædia.

‡ Kept by Dr. Johnson, Colonial Surgeon.

§ Kept in the 58th regimental hospital.



From the above it appears, after allowing for evaporation, that 31 inches of rain fell during 1844\*. This quantity I believe is below the usual average, because I have kept a rain guage for nine months, ending April, 1849, and already 37 inches of rain have fallen. At London, the mean annual quantity of rain is 24 inches†, at Montpelier it is 29 inches‡. At Rome it is 31§. The moisture in the air is ascertained by the rate of evaporation, and as, in London, the number of degrees which a thermometer falls from the evaporation of water is on an average 5°||, and as in Auckland it is 4°, it is obvious that the climate of Auckland, is more moist than that of London.

*Number of days on which rain falls.* In some countries all the rain falls in a few months, and the remainder of the year is dry, but in others the rain which falls is spread over a great part of the year. In the previous table, it will be seen that at Auckland, in 1848, rain fell on 167 days. At London, rain falls on 175 days¶, at Sidmouth, 135\*\*, at Montpelier, 82††, at Rome, 117‡‡, at Kinfauns, Scotland, rain fell on 137 days during the year§§. The superiority of Rome and Montpelier over Auckland, in respect to the number of wet days during the year, is great. England and New Zealand will be found to have a similar number of wet days.

*Pressure of the Air.* The pressure of the air has a marked influence on the human body. It would be out of place here to explain this, but I may mention, for the sake of illustration, that among the Himalaya mountains, in Asia, there is a place where the European children of parents living in India are sent to be educated, and to obtain that health which cannot be found in the burning plains of Hindostan. The heat at the above place, in the mountains, is temperate, but it has been observed that the children do not improve in health as children living in a similar temperature near the level of the sea. This effect is said to be caused by a want of density or pressure of the air, owing to the great elevation.

The mean pressure of the barometer at Auckland, for the year ending April, 1849, was 29.81 inches; the lowest which occurred was 28.96, the highest 30.34|||. The average height of the barometer in London, during the year, is 29.88¶¶, so that the similarity of these places in regard to the pressure of the atmosphere is very obvious.

*Prevailing Winds.* In May, June, July, September, October, and November, south westerly winds prevail, which is the cold wind in

\* At Wellington, New Zealand, during the year ending August, 1848, 46 inches of rain fell; register kept by Dr. Prendergast, 65th regiment.

† Howard, 20 years' observation.

‡ Portiven, observation for 1796 to 1806.

§ Calandulli, 1811 to 1815.

|| Arranged from Daniell's Meterology.

¶ Howard, 20 years' observation.

\*\* Dr. Clarke, 1813-1814.

†† Portiven, 1796 to 1806.

‡‡ Calandulli, 1811 to 1825.

§§ Lord Gray, 1824-1825.

||| These observations are all corrected to a temperature of 32° Fahrenheit, and the capability action of the barometer is added, observations made 70 feet above the sea. The lowest barometer occurred on the day the first shock of an earthquake was heard at Wellington.

¶¶ Daniell's Meterology.

this hemisphere. In August, north easterly and south-easterly, in December, easterly, in January, north-easterly, in February, southerly and south-westerly, in March, easterly and north-westerly. The wind is often very high and disagreeable at Auckland, and fruits and flowers are frequently blasted by it, when growing in an exposed situation. The wind often blows down the harbour with great violence, from the Gulf of Haukara.

*On the Influence which the Climate of Auckland has on the European Constitution—on the Ratio of Deaths. The Production of Disease—the Mental Energy—the Number of Births—and on the Vegetation of European Plants.*

1st. *On the Proportion of Deaths.* Since the first settlement of Auckland, in 1841, the inhabitants have always enjoyed a low rate of mortality, a circumstance confirmed by the testimony of the first settlers, and also by a calculation drawn from a rough estimate of the number of graves in the different places of interment. In 1847, the mortality during the year, among the inhabitants of Auckland, and the surrounding districts, was a little more than 1 per cent. In 1848, it was  $1\frac{1}{2}$  per cent., an increase attributable to the appearance of scarlet fever, for the first time, in Auckland. The 58th Regiment, during the year 1841, lost fewer men by death, than the regiment would have lost if stationed at Great Britain. The mortality among children below five years of age, from observations made on those of the pensioners, is about 2 per cent., for the year ending April, 1849.

2nd. *In producing Disease.* There is no disease peculiar to Auckland, if I except a low fever which occasionally prevails in the beginning of the year, that is, about the summer and autumn months; it is characterized by obscure symptoms, the brain is oppressed, and in consequence the sensibility to internal pain is deadened; the fever, so far as I have observed, did not appear to be contagious, but I am aware there are some facts which tend to prove it so. Diseases in Auckland are distinguished by a want of activity. Men walk about with maladies, which are rendered obscure from the want of acuteness in the symptoms; a climate more subject to atmospherical changes would drive these diseases into a state of active inflammation, which would soon terminate either in recovery or death; measles, small pox, cholera, typhus fever, hydrophobia, have not as yet appeared amongst the European or native inhabitants of New Zealand; I have seen no case of intermittent fever clearly produced by residence in Auckland, although there have been two cases in the regiment, attributable to service in New Zealand.

The subjoined table will show, however, better than any detailed description, the peculiarly favourable nature of the climate of Auckland for the health of the Europeans.

This table is thus read: out of 1000 soldiers stationed in Great Britain 921 are annually admitted into hospital; whereas in Auckland only 674 cases of sickness occur. On looking over the list of diseases, it will be seen that the number of admissions for affections of the lungs in Auckland is one-third less than it is in Great Britain,—a fact which it is very satisfactory to find, because “common rumour” describes consumption as a disease peculiarly fatal and prevalent among



Europeans in New Zealand, a report I do not think correct. In 1848 the 58th and 65th Regiments, both stationed in New Zealand, only lost by death, from disease of the lungs, 5 men per 1000; whereas the men of the heavy dragoons, quartered in the United Kingdom, lose on an average every year about 8 men per 1000 from chest complaints. The only diseases which appear more prevalent in Auckland than at home are rheumatic affections, diseases of the brain, and diseases of the eyes; the former may be attributed to the moisture of the climate; the disease of the eyes to the great glare in the barracks and the dust during the high winds; and the affections of the brain to elevation of temperature.

Classes of Disease.	Annual Number of Admissions into Hospital out of every 1000 Soldiers serving in*	
	England.	Auckland, N. Z.
Fevers .....	75	38
Eruptive Fevers .....	3	....
Diseases of the Lungs.....	148	100
„ Stomach and Bowels .....	94	95
„ Liver .....	8	5
„ Brain .....	6	16
Dropsies .....	1	4
Rheumatic Affections.....	50	107
Venereal „ .....	181	15
Abscesses and Ulcers .....	133	68
Wounds and Injuries .....	126	130
Disease of the Eyes.....	19	33
„ Skin.....	29	10
All other Diseases .....	44	53
Total.....	921	674

\* The ratio of admissions among the troops in Great Britain is taken from the Army Medical Statistics, and the proportion of admissions among the troops in Auckland is calculated from the cases treated in the 58th regimental hospital during the year 1848; average strength 610 men.

4th. *On Mental Energy.* That the activity of the mind is much influenced by the climate is well known. In all tropical countries there is a lassitude of mind as well as body which few men can resist,

and to which most people succumb. It would be out of place to dilate on this here; I would only ask the reader to glance his eye over all the countries in the world where the average temperature is above 60° Fah., and he will observe that the indigenous inhabitants are deficient in mental activity, as indicated by their works and actions: they act with violence for a short time from temporary excitement, but there is wanting that long continued mental application which characterizes the inhabitants of colder countries.

In the north part of the North island of New Zealand the missionaries have been long resident in the country, and they have produced a race already emerged into manhood. I have seen some of their children, and, from my own opinion, as well as the testimony of others, I am inclined to think they are deficient in that mental activity which sent their fathers across the seas to undertake the honourable, but laborious duties of a missionary.

This apathy may arise from their education and the want of excitement; still it is a fact which it is necessary to mention, as it may be produced by the mere nature of the climate, and the absence of all anxiety about obtaining food from the ease with which the soil yields up its fruit. A climate with an average temperature of about 50° Fah., with a considerable variation of temperature, is apparently the one best suited for the active developments of the human mind; and as a confirmatory proof of the correctness of what I state, I would beg to refer to the difference between the Anglo-Saxon race peopling the cold northern and the hot southern states of America.

5th. *On the Birth of Children.* During the year 1848, at the head-quarters of the 58th Regiment there were 83 married women, and these women during the year gave birth to 32 children. Among the division of pensioners I, as Medical Superintendent, brought to New Zealand, there were 50 married women under 40 years of age, and during the year ending April, 1849, 16 children were born; the rapid increase among the families of missionaries is well known. It is obvious, therefore, that the Anglo-Saxon race will fast increase in New Zealand, because the mortality among children under 5 years of age is low, and the number of children born is great.

6th. *On the Growth of European Plants.* Every European plant and flower yet tried has grown in the neighbourhood of Auckland. It is true the flowers have not the perfume, nor do they retain their smell so long as those in England. Grapes ripen in the open air, and occasionally come to considerable perfection; but the climate is too damp for their profitable cultivation in the neighbourhood of Auckland, although in other parts of New Zealand they do well. During the last year, 8 three-year old apple trees produced 500 ribstone pippins, all well sized and perfectly ripe; a grafted peach-tree in the same garden, of not above three years and a half standing, yielded upwards of 1200 peaches. The grass fields have a degree of green verdure with which even an Irishman is struck.

*What kind of Emigrants is New Zealand best suited for at present?* Before answering this question, I may mention that I have visited several places in the interior of New Zealand, both in the neighbourhood of Auckland and at the Bay of Islands, and have spent some time in the districts bordering on the rivers Waipa, Waikato, and



Mochon, and I have never seen a country better suited by nature for agricultural cultivation.

There is little trouble required to bring the fern land into a fit state to receive seed; and the abundant crops of wheat grown up the river Waipa prove the great fertility of the soil. In the neighbourhood of Auckland there is also much good land.

New Zealand is a country for the poor man to come to, as he will get plenty of good food by tilling the land for himself and his children. The man of property or the gentleman farmer will find it difficult to get a return for his capital, in consequence of the high price of labourers' wages, and the want at present of almost all exports. The only drawback to the poor man is the long voyage to New Zealand; but this is a temporary inconvenience, and if he select a good ship, not too crowded, and keep himself and his children as little between decks as possible, he will incur little risk to his health from fever or any sickness which may appear among the emigrants during the voyage.

In the town of Auckland there are persons who assert that the settlement will fail, because it has no exports; but who can tell what the resources of the country may be in a few years. The dissatisfaction of some people arises perhaps from a forgetfulness that an emigrant is not a man who goes abroad as a person goes to either Indies,—to make money and return home; a true emigrant is a man who adopts the new country as his future home, and is thankful if he and his children, by the sweat of their brows, can get plenty of food, have their health, and enjoy a few of the comforts of life; and, indeed, so long as this principle is kept in mind, no emigrant will ever have to regret settling in New Zealand.

There still exists among the people of Great Britain a dislike to New Zealand, from a terror or want of confidence in the native population,—a feeling which has apparently had its origin in the perusal of the well-known voyages of Captain Cook to these islands; but from what I have seen of the native race (and I have lived among them, and shared their hospitality), I have no doubt they will be found an advantage, in place of a drawback, to the settlers. Already, from the wise and benevolent policy of his Excellency Sir George Grey, the present Governor of New Zealand, they are fast becoming industrious and civilized; and if peace be not broken for a few years, the idea of fighting, though not banished from their memories, will in a great measure be repulsive to their feelings. In all countries to which the English people have emigrated, the indigenous races have been treated with severity, if not with cruelty; it will therefore be a Christian subject for the settlers in New Zealand to boast of, if in future years they can point to the children, the houses, the cattle, and the fields of the natives, and say, that in all other countries to which the inhabitants of Great Britain have migrated, the natives have been extirpated, whereas in New Zealand they have been civilized and preserved.

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## APPENDIX.

*Revenue and Expenditure of Auckland (New Ulster, which includes Auckland and the Northern Province of New Zealand) for 1848, compiled from the Government Gazette.*

## ORDINARY REVENUE.

Customs—Spirits .....	£9,774	14	10
Cigars and Tobacco .....	3,607	0	10
Ad valorem .....	9,996	16	9
Post Office .....	881	3	1
Fees and Fines—Supreme Court .....	74	7	6
,, Local and Police .....	548	3	2
,, Sheriff .....	8	0	6
,, Registers of Deeds .....	209	18	0
Miscellaneous Receipts .....	118	0	2
Licenses—Publicans .....	880	0	0
Auctioneers .....	160	0	0
Recovery of Gaol Rations to miscellaneous prisoners....	89	12	0
	<hr/> £26,347 16 10 <hr/>		

## Crown Land Revenue—

Fees on Crown Grants .....	111	0	6
Wavers of Pre-emption .....	1,077	0	3
Occupation Licenses .....	161	1	0
Proceeds of Sales .....	2,143	14	1
	<hr/> £3,492 15 10 <hr/>		

## Receipts in Aid—

Parliamentary Grant .....	22,500	0	0
Debentures for issue to Land Claimants .....	719	14	3
Receipts on account of Russell .....	40	0	0
Recovery from New Munster .....	8	9	6
	<hr/> £23,268 3 9 <hr/>		

Total.....£53,108 16 5

## EXPENDITURE.

## Civil Establishments—

Lieutenant-Governor .....	£141	10	0
Colonial Secretary Department .....	1,546	10	0
,, Treasury .....	865	16	8
Audit .....	450	0	0
Customs .....	3,232	6	2
Post Office .....	593	10	6
Councils .....	16	13	4
	<hr/> £6,846 6 8 <hr/>		

## Judicial Establishments—

Supreme Court .....	1,360	14	0
Law Officer .....	461	13	4
Resident Magistrate, Local Court, and Police .....	3,801	10	1
Sheriff and Gaol .....	923	11	7
Coroner .....	20	19	10
Registry of Deeds .....	182	8	10
	<hr/> £6,750 17 8 <hr/>		



## Land and Surveys—

Survey Department .....	£1,818	7	0
Land Commission .....	735	1	6
Compensation for Deficiencies .....	212	18	8
Land Commissioner's Department .....	74	3	4
Awards of Lands surrendered .....	893	10	9
Land Purchases .....	825	10	11
	£4,559	12	2

## Public Works and Roads—

Public Works .....	2,949	13	5
Roads .....	9,704	16	8
	£12,654	10	1

## Miscellaneous—

Medical .....	963	13	11
Relief to Sick and Destitute .....	163	14	6
Aborigines .....	571	3	1
Printing and Stationery .....	478	1	2
Chaplain .....	200	0	0
Interpreter to Aborigines with Engineer Department .....	22	15	0
Incidents .....	103	3	2
Postages .....	91	8	8
Harbour .....	590	4	0
Government Schooner .....	286	17	1
Tamaki Ferry .....	7	4	0
Travelling and Passages .....	11	1	6
	£3,489	6	1

## Military Charges—

Militia .....	73	4	0
Survey Marks for "Acheron" .....	9	18	0
Nene Waka's Annuity .....	30	0	0
	£113	2	0

## General Charges—

Governor-in-Chief and Establishment .....	3,116	18	8
Bishop .....	600	0	0
Interpreter to Officer Commanding Troops .....	126	3	6
Civil Secretary's Department (2 quarters) .....	331	14	5
Government Brig .....	1,037	6	6
Schools .....	3,466	0	0
Travelling and Passages .....	102	10	4
Refund of Customs to Commissariat .....	1,677	3	1
Coal Shed for Naval Service .....	230	0	0
Charges on Receipts in aid of Interest .....	2,315	14	2
Debentures and Debenture Certificates redeemed ....	651	4	0
Payment at Auckland for other stations .....	410	13	4
	£14,065	8	0

Total Expenditure as above..... £48,479 2 8

*Statistics of New Munster, New Zealand, down to 1848, compiled from Official Records in the Colonial Secretary's Office.*

[Read before the Statistical Society of London, in continuation of the preceding Paper, 17th February, 1851.]

THE preceding account of Auckland supplies a valuable outline of the condition of the northern portion of the Northern Island of New Zealand, commonly called New Ulster; and the following pages are appended to it as a complete summary of the statistics of the remainder of this interesting colony, forming the province of New Munster, divided into four districts. The first is that of Wellington, forming, with Wanganui or Petre, the southern part of the Northern Island. Next to this, on the opposite side of Cook's Strait, lies the district of Nelson, comprising the northern end of the Middle Island, half way down to Banks's Peninsula. The Middle Island, it should be observed, might more appropriately be called the Southern, in opposition to the Northern Island, separated from it by Cook's Strait; that which bears the name of the Southern Island being of comparatively very small extent and little value; insomuch that it does not enter at all into the present statements. The districts of Akaroa and Otago comprehend all the remaining portions of the Middle Island, which are nearer those settlements respectively. The names of Wanganui and Petre are applied indiscriminately to the settlement on the northern shore of Cook's Strait.

The returns are compiled from materials furnished by a general census taken in August 1848, and from those supplied for the ordinary Colonial Blue Book at the end of each year. This will account for some discrepancies in the totals of different returns respecting the same subjects, for which the authorities are indicated.

*Population.*

In the years 1845 and 1846, the population of New Munster had decreased 5·68 per cent. from its amount in 1844; but in 1847 and 1848 it increased 20·62 per cent. on its amount at the end of 1846. In Wellington, during the latter ten years, the increase was 17·06 per cent., in Nelson 9·00 per cent.

Years.	Europeans.		Strangers or Aliens.	Total.
	Males.	Females.		
1843.....	3,826	3,133	150	7,109
1844.....	4,029	3,296	500	7,825
1845.....	4,008	3,367	206	7,581
1846.....	3,944	3,348	89	7,381
1847.....	4,273	3,556	175	7,973
1848.....	6,200	4,283	....	10,483



*Place of Birth of the Population, as taken in August 1848.*

Born in the Colony.		In England.		In Wales.		In Ireland.		In Scotland.		In other British Colonies.		In Foreign Countries.	
Males.	Fem.	Males.	Fem.	Males.	Fem.	Males.	Fem.	Males.	Fem.	Males.	Fem.	Males.	Fem.
1·132	1·133	2·522	1·909	22	25	170	105	597	442	150	65	174	97
26·51		51·86		·55		3·26		12·16		2·39		3·17	

The number of registered births is no guide to the actual number that took place in the province in 1848, as it is certain that very many occurred which were never registered. But even those that were, amounted to 3·55 per cent. on the population at the end of 1847. An approximation may, however, be made to the real rate of increase by births, by comparing the number of children in the province under two years of age (p. 252,) with the numbers of the population at the end of the years 1845-6-7. As the returns for those years were taken in December of each year, and the return of children in August, 1848, the population returned at the periods mentioned may be considered the correct number of those of whom the children were the produce. The average population of these three years was 7,645 souls. The number of children under two years (deducting those belonging to Otago, the inhabitants of which settlement arrived in 1848), that is, the number born between August 1846, and August, 1848, was 760, which gives an average of 380 for each year. The increase consequently on the population in 1846 and 1847 was at the rate of 4·95, or nearly 5 per cent. per annum by births alone. The deaths in 1848 were only ·81 per cent. on the population of that year; the number who died being included in its amount. This would give 4·14 for the actual rate of annual increase of the population, exclusive of immigration. In Great Britain, the increase of population for ten years, 1831-41 (allowing for emigration) was 15·02 per cent., or only 1·50 per annum; and the per-centage above given is too low for New Munster, as the births of those who died under two years of age are omitted in the calculation. It will be seen that there are, exclusive of the military, more than four times as many English as Scotch in the province, and nearly four times as many Scotch as Irish. The foreigners are principally Germans, and the French at Akaroa. The total number of emigrants introduced by the New Zealand Company into Wellington, Nelson, and New Plymouth, was 8,904 souls, at a cost of 233,543*l.*, or 26*l.* per head, including cabin passengers.

*Age, Sex, and Condition of the Population in 1848.*

		Number of each Age.	
		Males.	Females.
Under 2 years of age .....		381	423
2    „    and under 7    .....		858	821
7    „                „    14    .....		708	619
14   „                „    21    .....		539	433
21   „                „    45    .....		1,948	1,298
45   „                „    60    .....		301	179
60   „    and upwards    .....		25	10
Total.....		4,760	3,783
Married .....		1,423	1,421
Single .....		3,337	2,382

*Immigration and Emigration.* The returns of immigrants and emigrants are mere lists of arrivals and departures. The only result, apparently, that can be obtained on this subject is an approximation to the excess of re-emigration over the immigration that has taken place, independently of that set on foot by the New Zealand Company in the first colonization of the country. Deducting from the total population of August 1848, which amounted to 8,543, the number *then* existing of persons *born in* the colony, which is shown to have been 2,264, we have 6,279 immigrants still in the province. Taking the whole number introduced by the New Zealand Company at 8,904 souls, and allowing 1,200 for New Plymouth, we have 7,704 for New Munster. If the number of immigrants at present in the colony be subtracted from this, the remainder is 1,423, which represents the excess of loss by death and re-emigration over gain by immigration, other than that caused by the New Zealand Company in founding the settlements of the province. As the deaths in question, by a calculation from the loose return we have of them, amount to between 400 and 500, the excess of loss by re-emigration would be about 1,000. The actual number of them that belonged to the body sent out by the Company the returns do not enable us to ascertain. The following table exhibits the amount of immigration and emigration to and from New Munster in the year ended 5th January, 1849 :—

Immigration.				Emigration.			
Adults.		Number of Children.	Total.	Adults.		Number of Children.	Total.
Males.	Females.			Males.	Females.		
570	235	287	1,092	247	65	53	365

The chief excess of immigration is into Otago.



*Medical Statistics.*

The hospital returns chiefly relate to the natives, and show conclusively that the diseases most frequent among them are those arising from want of good food, good shelter, and cleanliness; perhaps also from the absence of habits of industry. The following were the centesimal proportions of disease treated at the Wellington Hospital.

Fever.....	14.6		
Rheumatic Diseases.....	11.1	Abscess.....	8.9
Inflammation of Lungs .....	8.8	Ulcers .....	3.0
Consumption .....	4.7	Hakihaki .....	8.6
Cough and Catarrh .....	3.8	Scrofulous Diseases .....	5.4
	<hr/> 28.4		<hr/> 25.9
Contusions, Burns, &c. ....	5.4		
Ophthalmia .....	4.1		
Syphilis and Gonorrhœa .....	4.7		
Sixteen other Complaints.....	15.9		
	<hr/> 30.1		
Total.....	99.0		

Thus 71 per cent. of the cases of disease may be attributed to the causes above stated, for the 4.1 of cases of ophthalmia most probably arose from the habit of living in huts filled with wood-smoke. Of the 158 patients treated at the Colonial Hospital, from September 1847, to March 1848, 142 were cured, 15 died, and 1 was discharged as incurable; and from March 1848 to March 1849, of 197 treated, 185 were cured, 9 died, and 3 were discharged as incurable. Of the above, the greater number, as shown by the returns, came from the neighbourhood of Wellington and the West Coast, as far as Wanganui, and belonged to the Ngatiawa. Of the patients treated in 1848, 137 were in-door and 178 out-door.

*Occupations.*

Of the whole number of mechanics and craftsmen in the province no less than 54 per cent. were carpenters, joiners, splitters of wood, or sawyers. Of the 2,548 persons in the province following specific pursuits, there were 37.5 per cent. belonging to the labouring class engaged in pastoral or agricultural pursuits, 30.5 per cent. of mechanics and craftsmen, and 5.3 of marines and fishermen. The return of persons holding special licences for the sale of spirits affords a standard of the gradual spread of the settlers over the interior of the country since 1845; since one of the first symptoms of traffic commencing in a new direction, is the licensed house for the accommodation of travellers.

The number of houses licensed for the sale of spirits, &c., in 1848, was 10 in Wellington, 7 in Nelson, 1 in Akawa, and 3 in Otago, being in all 21.

The annexed table exhibits the distribution of occupations among the population of New Munster, in August 1848.

*Members of Professions.*

Lawyers, Clergymen, Surgeons, } Military Officers, and Surveyors }	84
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*Capitalists and Employers of Labour.*

Land Proprietors, Farmers, and } Merchants.....	253
Manufacturers, Brewers, and Mil- } lers .....	15
Shopkeepers and Retail Dealers .....	105
Total.....	457

*In Permanent Employ of Individuals,  
but not Manual Labourers.*

Clerks and Overseers.....	106
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*Manual Labourers:**Mechanics and Craftsmen.*

Printers .....	16
Sawyers and Splitters.....	147
Carpenters and Joiners .....	192
Brickmakers .....	16
Bricklayers .....	25
Masons and Plasterers .....	18
Smiths .....	47
Tanners .....	4
Saddle and Harness Makers .....	3
Shoemakers .....	99

Tailors .....	26
Butchers .....	23
Bakers .....	30
Of Crafts not specified .....	133

Total..... 779

*Pastoral and Agricultural Labourers.*

Husbandmen .....	654
Shepherds.....	77
Keepers of Horned Cattle .....	146
Farm Servants, including Gardeners .....	78

Total..... 955

*Miscellaneous.*

Carters .....	44
Mariners and Fishermen .....	135
Domestic Servants { Male .....	72
{ Female .....	192

*Persons following no specific Trade or  
Calling.*

Naval and Military Pensioners ....	7
Males—principally Children .....	2,198
Females, Adults, and Children ....	3,490
Paupers, or receiving Alms.....	...
Strangers and Visitors.....	13

Grand Total..... 8,448

*Production.*

In the whole province a steady increase in cultivation has been maintained since 1843, the greatest being in 1845-6. In the district of Nelson the number of acres cropped in 1844-5-6 increased at the rate of 1000 a-year, though the population in the same years was decreasing.

*Comparative Table of the Quantity of Land (in Acres) in Cultivation in the Province of New Munster, for the Years from 1843 to 1848 inclusive.*

Years.	Wheat.	Oats.	Barley.	Potatoes.	Pasture.	Total.	
						In Crop.	In Cultiva- tion.
1843.....	43	8	12	14	132	1,200	1,382
1844.....	1,026	181	286	510	210	2,003	2,213
1845.....	1,585	297	569	536	291	2,993	2,384
1846.....	1,983	289	1,032	332	488	3,714	4,202
1847.....	1,990	327	1,192	613	825	4,123	4,948
1848.....	1,957	582	1,165	617	1,581	4,322	5,903



*Stock.* In the years 1843-4-5 horned cattle increased in the settlement of Wellington at the rate of 400 a-year; in 1846-7, of 200 a-year; and in 1848 the increase was 2014. In Nelson the number of horned cattle in 1848 was 1500 greater than in 1847; and sheep, which had increased at the rate of 3000 a-year during 1843-4-5-6, increased by 10,000 in 1847, and by 17,000 in 1848. This was the consequence of the opening of the Wairau districts to flock-owners.

*Comparative Return of the Amount of Stock in the various Settlements of the Province of New Munster in the Year 1848.*

Settlements.	Horses.	Horned Cattle.	Sheep.	Goats.	Pigs.
Wellington .....	672	6,786	35,507	1,111	2,008
Petre .....	67	886	582	178	15
Nelson .....	234	3,540	37,699	5,353	3,230
	8*	5*	....	200*	5,500*
Akaroa .....	16	679	4,396	310	627
Otago .....	103	781	7,731	206	1,635
Totals.....	1,002	12,672	85,915	7,158	6,924
	8*	5*	....	200*	5,000*

The figures to which asterisks are attached describe stock which is the property of the aboriginal inhabitants, which is returned only for Nelson, although they possess in the other settlements a considerable number of horses and some cattle.

The whole province contained (in 1848) 96 buildings of stone or brick, 1,008 of wood, and 623 of other materials, making a total of 1,737, besides 1,465 outbuildings. The total number of vessels belonging to New Munster in that year, owned by Europeans, was 31, with a tonnage amounting to 844, and by natives 8, with a tonnage amounting to 121. The rent drawn by the aboriginal inhabitants from Europeans, in 1848, amounted to 844*l.* 10*s.*, and the amount of mortgages outstanding to 20,831*l.* 18*s.* 5*d.*

*Imports and Exports.*

The articles imported into the colony in greatest quantities are flour, tea, sugar, live stock, beer, wine, spirits, and tobacco. It is satisfactory to observe that the importation of flour into Wellington from beyond seas has been declining since 1846, while the quantity imported coastwise has been proportionately increasing. From the returns of coastwise imports for one quarter, it appears that 100 tons must have been so imported in 1848.

The whaling establishments of Wellington are rather on the decline; the value of the oil produced by them in 1843 having been 32,680*l.*, while in 1848, it was only 14,808*l.*, obtained by 2 ships and 28 boats, taking 175 tons of sperm and 302 of black oil; valued, the former at 50*l.* and the latter at 14*l.* per ton. The stations extend from the Bay of Plenty to Foveaux Straits, and are not all therefore comprised within the province of New Munster.

*Imports and Exports in 1848.*

	Imports.	Exports.	Excess of Imports.
	£	£	£
Wellington .....	75,764	20,902	54,862
Nelson .....	21,879	1,973	19,906
Otago .....	11,767	....	11,767
Total .....	109,412	22,875	86,537

This return gives sufficient cause for solicitude, but it must be borne in mind that it exhibits no normal state of things, and that the excess of imports indicates in great part merely an importation of capital for a future return as in the Nelson and Otago districts; in the former, consequent on the acquisition of the Wairau, when great quantities of sheep and cattle were immediately introduced. Another source of the excess of imports over exports is the commissariat expenditure, which was only temporary. The chief exports are oil, whalebone, skins, and above all, *wool*, which is the rising staple produce of the colony. The coasting trade is chiefly in bacon, pork, butter, flour and grain, colonial produce, oil and whalebone, sheep and cattle, skins, timber, wool, flax and ropes, potatoes, oysters, and limestone and shells. The total returns of shipping, inwards and outwards, for 1846-7-8 show a gradually increasing trade; and the number of men in British and British-colonial ships amounted to 1,054 in the latter year.

*Native Trade.* No return of the exact quantities of particular articles was kept till the last quarter of 1848. The produce imported from the east coast of the Northern Island is entirely grown by the native population, and much of that from the west coast. So with respect to Queen Charlotte's Sound. The number of tons employed in this trade amounted in 1848 to 6,044, the tonnage of each vessel being multiplied by its number of trips. When in addition to the Maori produce thus imported, the quantity brought by land into Wellington is taken into consideration, as well as the money spent, chiefly among the natives, in the construction of roads (about 17,000*l.* in 1848), it will be apparent what a powerful agency for imparting the most effective kind of civilization is brought to bear upon them by the existence of the settlement of Wellington with its government expenditure. The work on the roads gives them regular habits and a knowledge of the implements of industry; while they are encouraged and stimulated to persevere in it by the tempting market and ready remuneration the settlement offers for its fruits. The resources of the colony are at the same time developed, and the best guarantee provided for the preservation of peace. The system of road-making is, in fact, a native school of industry, and the effects of attendance at it are seen, not only in the personal benefits, physical and moral, which *work* must unquestionably confer on the aboriginal people; but in the spread of their cultivation, the increase of their property and trade, and, as a necessary consequence, their more willing submission to European law.

*Wages and Provisions.* The wages of domestic servants at Wel-



lington are 20*l.* a-year, of predial servants, 35*l.*, and of artizans, 7*s.* 6*d.* a-day, while beef and mutton are 6½*d.*, and bread 2*d.* per lb.

*Revenue and Expenditure of the Province of New Munster from 1840 to 1843 inclusive.*

Years.	Revenue.			Expenditure.		
	£	s.	d.	£	s.	d.
1840.....	836	5	9	1,550	19	11
1841.....	4,425	9	2	3,418	0	4
1842.....	13,154	0	9	6,365	6	6
1843.....	12,592	17	2	8,356	18	5
1844.....	8,602	12	11	7,919	2	2
1845.....	6,341	6	0	11,214	8	0
1846.....	9,098	8	9	25,162	7	4
1847.....	15,515	5	3	46,150	3	2
1848.....	16,376	2	4	42,111	1	2

The receipts in aid were for 1846, 21,671*l.* 0*s.* 1*d.*; 1847, 33,850*l.*; and 1848, 27,750*l.* These are derived from a Parliamentary grant.

For the year ended 31st March, 1849, the total revenue of Wellington was 17,747*l.* 5*s.* 1*d.*, to which 21,450*l.* was added by a grant in aid, making a total of 39,197*l.* 5*s.* 1*d.*, while the expenditure, including 16,908*l.* 1*s.* 6*d.* on roads, was 41,062*l.* 8*s.* 4*d.*; so that the grants in aid may be considered in great part as a subsidy to the natives for road-making, while the general revenue promises ultimately to meet the general expenditure, composed of the items already enumerated in the account of Auckland. In Nelson settlement, the fixed revenue amounted in the same year to 2,087*l.* 16*s.* 7*d.*, and the grant in aid to 1,100*l.* making a total of 3,187*l.* 16*s.* 7*d.*, while the expenditure was 3,301*l.* 7*s.*, including 258*l.* 17*s.* 11*d.* on roads. In Otago settlement the fixed income was 1,258*l.* 5*s.* 2*d.* while the expenditure was 1,091*l.* 17*s.* 10*d.* In Akawa the revenue was 84*l.* 17*s.* the grant in aid 350*l.*, making a total of 434*l.* 17*s.* and the expenditure 438*l.* 18*s.* In Wangarui the income was 63*l.* 1*s.*, and the expenditure 399*l.* 2*s.* 1*d.*

*Moral Condition.*

*Education.* The conclusions to be drawn from the educational returns are much less definite and decisive than would have been the case had the numbers of those acquainted with, or ignorant of, the elementary arts of reading and writing been classified more completely according to their ages.

*Number of Persons in the Province of New Munster able and not able to Read and Write.*

	Males.	Females.	Total.
Cannot read.....	1,286	1,234	2,520
Can read only .....	875	862	1,737
Can read and write ....	2,602	1,664	4,266
Total .....	4,763	3,760	8,523

*Day and Sunday Schools in the Province of New Munster in 1848.*

Classes of Schools.	Number of Schools	Scholars.		
		Males.	Females.	Total.
<i>Day Schools.</i>				
Private.....	13	251	142	393
Church of England.....	7	235	159	394
Scotch Presbyterian.....	1	22	26	48
Wesleyan.....	4	188	124	312
Roman Catholic .....	1	30	5	35
Independent, Primitive Methodist, } German Lutheran, &c..... }	5	83	48	166
Non-Sectarian.....	11	115	109	361
Totals.....	42	924	613	1,709
<i>Sunday Schools.</i>				
Church of England.....	6	182	138	332
Scotch Presbyterian .....	2	47	51	98
Wesleyan.....	4	33	34	67
Roman Catholic .....	1	30	5	35
Non-Sectarian.....	8	195	220	420
Totals.....	21	487	454	952

The number of professed members of the Church of England is 4,408, of Wesleyans 1,225, of other Protestant dissenters 2,219, of Roman Catholics 537, of Jews at the town of Wellington 28, and of those professing to belong to no particular religious sect 246. The places of worship were 9 Church of England, 1 Church of Scotland, 7 Wesleyan, 7 others of Protestant Dissenters, and 3 Roman Catholic.

The results of a comparison of the proportion of the population unable to write and read, with the corresponding proportion in England and Wales, appear to be greatly in favour of New Zealand; the proportion throughout England and Wales in 1844 of those signing the marriage-registers with marks was 40·8 per cent. of the whole number signing. Though this may be too high a per-centage for the whole population at the present time (as most of the males under 20 and females under 15 may be considered as excluded, and the education of the young had advanced since the portion of the population included in the marriage-register was of an age to receive it, so that a return comprising the former would *lower* the per centage,) yet the proportion, it may be presumed, would even then be much greater than in New Munster, where those above 7 years old, unable to write, are only 29·3 per cent. of the population above 7. This comparison is on too limited a scale perhaps to warrant general conclusions; but it seems to suggest, what more extended observation will probably prove to be the case, that emigration is most frequent among the better educated of the labouring classes at home—that education, in short, is a great promoter of emigration.

The proportionate numbers receiving education, compared with those at home, seem also very creditable to New Munster. Of those



between the ages of 2 and 14 (the only periods up to 15 specified in the returns), the centesimal proportion in New Munster receiving *daily* education was 58·66, a per-centage which would be increased could the number under 5 years be deducted from both sides of the proportion. Even in Scotland the proportion of those receiving education in 1837, was only 31·41 per cent., and to the per-centage of New Munster should be added those attending Sunday schools alone, an amount not ascertainable from the returns as made.

In England and Wales, in 1833, the proportion receiving daily education in schools of all kinds was 30·7 per cent. The fact, however, still remains, that there are about 26·8 per cent. of the children, between the ages of 5 and 14, (deducting three-fifths from the number between 2 and 7, to get an approximation to that between 5 and 7,) who are receiving no *daily education* in schools in New Munster. It is indisputable, therefore, that even allowing for private instruction at home, a great deal is left to be done in the way of education in the province.

The proportion of those receiving daily education, to the whole number between 2 and 14 years, is 61·78 per cent. at Wellington, 56·89 at Nelson, and 35·55 at Otago. It is highly creditable to the founder and promoters of the Nelson schools that their per-centage is so high as it is; for the centesimal proportion of the inhabitants of the town and suburbs is, in Nelson 42·4 to the whole population, while at Wellington (including Wade's Town, but not Karori or Porirua-road), it is 56·4 per cent. This much greater dispersion of the population over rural districts makes provision for the education of the children far more difficult.

#### *Criminal Statistics.*

The committals in the whole province in 1848 were 17, and the convictions 10; the average of this and the 4 preceding years being 25 and 13½; and during this period the total number put on trial was 92, of whom 31 were from New South Wales, Hobart Town, or Parkhurst, 25 soldiers, 14 sailors and unknown, 18 original settlers, and 4 natives. In 1848 the summary convictions were, for assault 38, for drunkenness 82, for larceny 13, and for other offences 77. The average centesimal proportions of convictions to committals was in 1848, in Wellington 60·31, in Nelson only 37·50, or about twice as many convictions per cent. on committals in the former place as in the latter. The average for the five years throughout New Munster is considerably below the per-centage in England, where 72·14 per cent. of committals end in convictions, or in Scotland, where 74·91 per cent. have this result.

This may in some degree be accounted for by the necessary imperfection of the means for securing the punishment of offenders in a young colony, and especially in one where the settlements are dispersed along so extensive a sea-coast as that of New Zealand—where the class most given to breaches of the law can pass so easily out of the reach of justice, and the expense of bringing witnesses to the place of trial is unavoidably great. The convictions for all offences, excluding those of natives, before the supreme court in the district of Wellington, taking an average of the 5 years ending December 31,

1848, bore to its population the proportion of 1 conviction to every 556 souls; the committals 1 to every 338 souls. In Nelson the corresponding proportions were, of convictions 1 to every 1641, and committals, 1 to every 753 souls.

Thus convictions in Wellington were three times as many as in Nelson, in proportion to their respective population, and committals something more than twice as many; and the committals throughout New Munster in these 5 years were in the ratio of 1 in every 400 souls. In England and Wales, in 1841, they were only 1 in every 573, and in Scotland only 1 in every 738. This unfavourable result may, as far as the settlers are concerned, be satisfactorily accounted for, inasmuch as a reference to the table shows from what source the large amount of crime proceeds. If from 88 criminals during the 5 years be deducted those of prisoners from New South Wales and Hobart Town, and the free from Parkhurst, it will be found that the amount of committals is reduced by one-third ( $88 - 31 = 57$ ), which gives a proportion of 1 committal to every 464 of the population, when the per-centage (2.39) from the British colonies, in 1848, which may be taken as the proportion of the other years, has been deducted from the average population with which the committals are compared. Again, deducting in addition to these, the committals of soldiers from one side of the proportion, and the number of military from the other, we have the committals diminished by nearly two-thirds ( $88 - 56 = 32$ ), or 1 to every 697 souls, a much smaller proportion than in England; and if again the committals of sailors and persons whose previous country was not known be omitted from the calculation, there will be left for committals among original settlers only one-fifth of the whole ( $88 - 70 = 18$ ). The exact proportion to the corresponding population cannot be determined in this last case, because the number to be subtracted from the population is not ascertainable; but it is clear that it would be such as to make the comparison with either Scotland or England a very favourable one for Wellington. In Nelson the proportion, including all classes, is less than either of these countries.

The evils of the neighbourhood of penal colonies are shown by the fact first proved, that one-third of all the crime of the province for the last five years has been supplied thence; and this may in some degree account for the small proportion of convictions to committals noticed above—so large a number of the prisoners committed having been old offenders, most probably long practised in all the arts of eluding justice.

With reference to civil cases, the returns indicate from the considerable increase in the number and the proportion of cases settled out of court, that the extended powers given to the magistrates have operated beneficially for the public, and that a greater amount of business in both the criminal and civil departments of summary jurisdiction can be efficiently carried on in the single court than in the two together which previously existed, namely, the Police Magistrates' and the Court of Requests. In 1848, 385 civil cases were disposed of in the Resident Magistrate's Court in New Munster.

It may be mentioned that there are 25 natives among those appointed assessors in New Munster, under the resident magistrates' ordinance; and that out of the total sum of 562*l.* 13*s.* 11*d.*, deposited



in the Wellington Savings' Bank in 1848, 196*l.* 15*s.* 6*d.* belonged to friendly, religious, and benevolent societies, and 86*l.* to 6 native depositors; the remainder belonging to 52 European depositors. The total number of letters and newspapers received at and despatched from the Wellington Post Office in the same year was 60,089, the newspapers being somewhat in excess of the letters; and of these 18,492 were to and from London, 13,814 to and from Auckland, 7,378 to and from Sydney, 8,066 to and from Nelson, 3,853 to and from New Plymouth, 4,579 to and from Petre, &c.

It is hoped that an analysis so authentic of the colonial life of our most distant and not least interesting dependency will be found well worthy of the record which is here granted to it: and it will not be inaptly concluded in the following terms employed by a gentleman of the best information resident at Wellington, and dated on the 28th of January in the present year, 1851. "The total European population of New Zealand is now about 25,000. The natives number about 80,000, chiefly in the north. They are decidedly decreasing, owing to a great deficiency of women and very few children. In about twelve or fifteen years, I believe, the European population will be 50,000, and may be even more, and the native population will probably be reduced to about the same number. The chief wealth of the colony consists in cattle and sheep, of which the latter now number 200,000; and doubling every other year, we shall in six years have at least 1,000,000, yielding about 3*s.* each per annum in wool, or 150,000*l.* The plains of Canterbury, which I have just visited, are admirably adapted for both cattle and sheep, and I have no doubt that this will soon be a very flourishing settlement; but I doubt whether the Association will find the sale of land such as to enable them to meet their expenditure."

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## PROCEEDINGS OF THE STATISTICAL SOCIETY OF LONDON.

*Seventh Ordinary Meeting. 19th May, 1851.*

The Rev. E. Wyatt-Edgell in the Chair.

Mr. T. J. Brown, (the Assistant Secretary,) read a Paper on the National Debts and Revenues in proportion to the extent of Area and Population of the various European States.

*Eighth Ordinary Meeting. 16th June 1851.*

The Right Honourable Lord Overstone, President, in the Chair.

Mr. F. G. P. Neison read a Paper on the Mortality from Intemperate Lives.

Mr. Kennedy brought before the Meeting a notice of the Census of the United States for 1850, and explained the mode of collecting it.

M. Quetelet exhibited Maps of Criminal Statistics in England and Wales.

*An Account of the Quantities of Coals, Cinders, and Culm, Exported from the United Kingdom to Foreign Countries and the British Settlements Abroad, with the Rates and Amount of Duties received thereon, in the Year 1850.*

[Sessional Paper, No. 450, 1851.]

	Quantities Exported.	Amount of Duties received.		
	Tons.	£	s.	d.
Coals .....	3,211,619	1,033	17	6
Cinders .....	137,348	11	17	7
Culm .....	2,913	...		
Total .....	3,351,880	1,045	15	1

*Rates of Duty on Coals, Cinders, and Culm exported in the Year 1850.*

- To British Possessions ..... Free.
- To Foreign Countries :
- In British ships, or in Foreign ships }  
        entitled to the privileges conferred } Free.  
        by Treaties of Reciprocity ..... }
- In Foreign ships not entitled to the } Previously to 14 August..... 4s. per ton.  
        privileges conferred by Treaties of } From and after 14 August .... Free.  
        Reciprocity ..... } (Per Act 13 & 14 Vict., c. 95.)

*Abstract of the Census of 1851.*

[From Paper presented to Parliament by the Registrar-General.]

THE Census Act, and the Instructions issued in conformity with its provisions, required that the 40,000 enumerators employed should copy into as many books all the particulars collected by them concerning the inhabitants of Great Britain. These books were to be placed, complete, in the hands of the 2190 Registrars in England, and the 1074 Superintendents of Parishes and Burghs in Scotland, who were to subject them to a strict examination, and make all necessary corrections. This being accomplished, the books were to be transferred to the custody of the 624 Superintendent Registrars in England, and the 115 Sheriffs, Sheriffs-Substitute, and Provosts in Scotland, who were required to test the accuracy of their contents, by a further process of revision.

The Act of Parliament allowed these officers until the 1st of June, for the purpose of returning the revised books to the Census Office, where they have still to undergo strict and minute examination and revision, before any detailed and authentic statement of results can be presented to the world. As this essential labour must, however, of necessity, engage much time, it was thought desirable not to withhold from the public such an approximation to the facts as might be



obtained without waiting for the entire completion of this series of checks. The Registrars, therefore, in England, and the Sheriffs and Provosts in Scotland, were desired to frame and to forward to the Census Office summaries of the population and houses within their respective districts.

From these summaries the following tables have been compiled, and they must be taken to represent the results of the Census according to the statements of the local officers, previous to the revision now in progress at the central office. And although minute accuracy is not in these tables to be looked for, neither is it to be apprehended that the alterations which a careful revision of the original documents may render necessary for a future publication, will be of importance sufficient to lessen the value of the figures as materials for whatever general inferences may fairly be drawn from them.

In the present publication, the "Counties of England and Wales," which may be denominated "*Registration Counties*," comprise groups of Registration Districts, generally conterminous with Poor Law Unions; consequently, the aggregates of such districts seldom correspond with the precise boundaries of the actual counties. The rule adopted, whenever a district extends into more than one county, has been to assign it wholly to that county in which, at the Census of 1841, the greater portion of the population of that district was located. For the purpose of comparison between the different Censuses, the population of the counties previous to 1841 is given for the same boundaries as those which have since been assigned to the "*Registration Counties*." As Scotland is still without any system of registration, the counties there remain as before.

The tables, so far as concerns the return of females, require no explanation; but the return of males is disturbed by the circumstances that a portion of the Army, Royal Navy, and Merchant Service, is out of the country—that the numbers vary largely—and that in the earlier Censuses no attempt was made to distinguish those at home and abroad, or those belonging to Ireland and Great Britain. Reserving these questions for investigation, the following are the facts of most importance to be borne in mind in reasoning on the tables.

In every Census of Great Britain, from 1801 to 1831, the enumerators were instructed to take an account of the number of persons actually found within the limits of each parish, township, or place, "*exclusive of men actually serving in His Majesty's Regular Forces or Militia, and exclusive of seamen, either in His Majesty's service or belonging to registered vessels.*" The Army, Royal Navy, marines, and seamen in registered vessels of the United Kingdom, are added to the population in the *General Summary of Great Britain*, with a proper intimation that "many soldiers and sailors are *attributable to Ireland*." In 1841, the instruction was different; the soldiers and sailors ashore in Great Britain were enumerated at their several barracks or places of residence, and entered under the parishes in which they slept or abode on the night of June 6th: 5016 persons were returned as travelling on railways, and can now be referred to no particular locality.

In 1851, the enumerators were instructed to take an account of the whole of the population, including soldiers and sailors who slept or abode in their districts, on the night of Sunday, March 30th. The

persons travelling on railways on that night were returned at the places of arrival, except the few who would not reach their destination at an early hour on Monday, the day of enumeration. The Royal Navy in British ports was returned; and arrangements were made with the Commissioners of Customs, who employed their officers to enumerate all the persons on board vessels, in each port of the United Kingdom, on the night of the Census. The population in vessels is thus included in the returns of the districts containing the ports and docks, or the districts to which the ports are adjacent. This course has been adopted with a view to a subsequent comparison of the population of each district with the registered births and deaths.

Table I. comprises the population enumerated on March 31st, 1851. And an estimate has been made from the official returns of the number of males in the Army, Navy, and merchant seamen belonging to Great Britain, but stationed in the East Indies, the colonies, and abroad, when the Census was taken.

In reading Table III. it will be recollected that the army at home (29,846 in England and Wales, and 2,884 in Scotland) is included in the return for 1841; and that the return of 1851 includes not only the army, but 45,295 persons in England and Wales, and 5,363 in Scotland, on board ships in the several ports and docks.

The three first columns in Table VI. are obtained by subtracting the number of persons enumerated in 1801 from the number of persons enumerated in 1811; the numbers enumerated in 1811 from the numbers enumerated in 1821; and the numbers enumerated in 1821 from the numbers enumerated in 1831. The army in the respective counties not having been enumerated in 1831, was deducted from the return of 1841, before taking the difference. The persons on railways (5,016) have also been deducted. In obtaining the last column, the numbers returned in 1841, including the military, were subtracted from the numbers returned in 1851, also including the military, but exclusive of the Royal Navy and seamen in ports, amounting in the latter year to 45,295.

In calculating the *rates of increase*, the same considerations are taken into account; and a correction is made for the slight inequality in the intervals between the Censuses. The decennial rate of 1841-51, derived from the two returns made at an interval of 9·814 *years*, expresses the *rate of increase* in 10 *entire years*. The interval between the Censuses of 1801 and 1851, is taken in the calculation at 50 years. The numbers in the Army and the Royal Navy have varied so much at different censuses, that the rate of increase derived from the females enumerated is probably the most correct expression of the increase of the whole population.

The Census of 1801	was taken on	March 10	} and on the days immediately subsequent thereto; if <i>one</i> day was not sufficient. In 1841 and 1851 the Enumerators were instructed to return only those who slept or abode in their districts on the night preceding the day named.
„ 1811	„	May 27	
„ 1821	„	„ 28	
„ 1831	„	„ 30	
„ 1841	„	June 7	
„ 1851	„	March 31	



## GREAT BRITAIN.

TABLE I.—*Houses and Population of England and Wales, of Scotland, and of the Islands in the British Seas, on March 31st, 1851.*

	Houses.		
	Inhabited.	Uninhabited.	Building.
GREAT BRITAIN AND ISLANDS IN THE BRITISH SEAS	3,669,437	165,931	29,114
England and Wales.....	3,280,961	152,898	26,534
Scotland.....	366,650	11,956	2,378
Islands in the British Seas .....	21,826	1,077	202
	Population*.		
	Persons.	Males.	Females.
GREAT BRITAIN AND ISLANDS IN THE BRITISH SEAS	20,936,468	10,192,721	10,743,747
England and Wales.....	17,922,768	8,762,588	9,160,180
Scotland.....	2,870,784	1,363,622	1,507,162
Islands in the British Seas .....	142,916	66,511	76,405
The part of the Army, Navy, and Merchant Seamen } belonging to Great Britain, but out of the Country } when the Census was taken (estimated from returns) }	167,604	167,604	....

## ENGLAND AND WALES.

TABLE II.—*Houses and Population in Divisions and Registration Counties.*

Divisions and Registration Counties.	Houses.		
	Inhabited.	Uninhabited.	Building.
ENGLAND AND WALES .....	3,280,961	152,898	26,534
1. London Division .....	307,722	16,889	4,817
2. South Eastern Division .....	298,231	12,465	2,513
3. South Midland Division .....	247,019	9,533	1,374
4. Eastern Division .....	229,005	9,763	1,237
5. South Western Division .....	338,926	19,411	1,903
6. West Midland Division .....	418,559	20,016	2,875
7. North Midland Division .....	246,505	9,038	1,485
8. North Western Division .....	436,285	21,701	4,226
9. York Division .....	358,694	16,469	3,244
10. Northern Division .....	164,516	7,151	1,311
11. Welsh Division .....	235,499	10,462	1,549
	Population*.		
	Persons.	Males.	Females.
ENGLAND AND WALES .....	17,922,768	8,762,588	9,160,180
1. London Division .....	2,361,640	1,103,730	1,257,910
2. South Eastern Division .....	1,628,082	807,850	820,232
3. South Midland Division .....	1,234,283	610,199	624,084
4. Eastern Division .....	1,113,710	547,788	565,922
5. South Western Division .....	1,803,706	864,929	938,777
6. West Midland Division .....	2,132,853	1,052,234	1,080,619
7. North Midland Division .....	1,214,621	602,399	612,222
8. North Western Division .....	2,487,351	1,212,342	1,275,009
9. York Division .....	1,788,767	886,845	901,922
10. Northern Division .....	968,934	480,994	487,940
11. Welsh Division .....	1,188,821	593,278	595,543

\* Seamen and others on board vessels on the night of 30th March, 1851, are included in the numbers given in these Tables.

## ENGLAND AND WALES.

TABLE III.—*Population enumerated in Divisions and Registration Counties, 1801, 1811, 1821, 1831, 1841, and 1851.*

Divisions and Registration Counties.	PERSONS.					
	1801	1811	1821	1831	1841	1851
ENGLAND AND WALES.....	8,892,536	10,164,068	11,999,322	13,896,797	15,914,148	17,922,768
1. London Division .....	958,863	1,138,835	1,378,947	1,654,994	1,948,369	2,361,640
2. South Eastern Division .....	878,066	1,007,932	1,171,690	1,320,843	1,479,863	1,628,082
3. South Midland Division .....	707,322	788,377	921,515	1,030,420	1,141,542	1,234,283
4. Eastern Division .....	696,223	756,202	879,121	974,815	1,040,616	1,113,710
5. South Western Division .....	1,100,314	1,219,617	1,416,255	1,592,986	1,740,032	1,803,706
6. West Midland Division .....	1,089,491	1,239,113	1,430,986	1,655,054	1,902,125	2,132,853
7. North Midland Division .....	651,197	745,493	866,721	986,592	1,110,203	1,214,621
8. North Western Division .....	872,663	1,062,976	1,330,767	1,677,518	2,067,009	2,487,351
9. York Division .....	851,283	978,129	1,166,522	1,366,802	1,584,116	1,788,767
10. Northern Division .....	485,347	538,640	625,417	712,444	826,710	968,934
11. Welsh Division .....	601,767	688,774	811,381	924,329	1,068,547	1,188,821
Persons travelling by Railways and Canals, on night of June, 6-7th, 1841 .....	..	..	..	..	5,016	* ..
ENGLAND AND WALES.....	MALES.					
	1801	1811	1821	1831	1841	1851
ENGLAND AND WALES.....	4,254,735	4,873,516	5,849,405	6,771,196	7,777,586	8,762,588
1. London Division .....	437,571	517,783	641,221	766,727	912,001	1,103,730
2. South Eastern Division .....	429,005	495,171	581,693	651,994	734,572	807,850
3. South Midland Division .....	345,138	384,305	454,366	509,090	564,190	610,199
4. Eastern Division .....	335,514	363,940	432,068	479,576	509,467	547,788
5. South Western Division .....	512,794	572,459	679,758	767,238	836,296	864,929
6. West Midland Division .....	527,654	601,269	703,028	815,661	937,285	1,052,234
7. North Midland Division .....	319,433	364,932	429,577	489,205	549,547	602,399
8. North Western Division .....	419,263	508,842	649,310	817,661	1,010,960	1,212,342
9. York Division .....	414,876	479,756	577,446	675,467	784,787	886,845
10. Northern Division .....	226,820	254,974	301,342	342,841	404,735	480,994
11. Welsh Division .....	286,667	330,085	399,596	455,736	529,616	593,278
Persons travelling by Railways and Canals, on night of June, 6-7th, 1841 .....	..	..	..	..	4,130	..
ENGLAND AND WALES.....	FEMALES.					
	1801	1811	1821	1831	1841	1851
ENGLAND AND WALES.....	4,637,801	5,290,552	6,149,917	7,125,601	8,136,562	9,160,180
1. London Division .....	521,292	621,032	737,726	888,267	1,036,368	1,257,910
2. South Eastern Division .....	449,061	512,761	589,997	668,849	745,291	820,232
3. South Midland Division .....	362,184	404,072	467,149	521,330	577,352	624,084
4. Eastern Division .....	360,709	392,262	447,053	495,239	531,149	565,922
5. South Western Division .....	587,520	647,158	736,497	825,748	903,736	938,777
6. West Midland Division .....	561,837	637,844	727,958	839,393	964,840	1,080,619
7. North Midland Division .....	331,764	380,561	437,144	497,387	560,656	612,222
8. North Western Division .....	453,400	554,134	681,457	859,857	1,056,049	1,275,009
9. York Division .....	436,407	498,373	589,076	691,335	799,329	901,922
10. Northern Division .....	258,527	283,666	324,075	369,603	421,975	487,940
11. Welsh Division .....	315,100	358,689	411,785	468,593	538,931	595,543
Persons travelling by Railways and Canals, on night of June, 6-7th, 1841 .....	..	..	..	..	886	..

\* Persons travelling by railways on the night of Sunday, March 30th (1851), were enumerated in the places at which they arrived on Monday morning; a few who would not have completed their journey early on Monday morning were enumerated at the Euston Square Station, London.



TABLE IV.—*Comparative Statement of the Number of Houses.*

	HOUSES.	1801.	1811.	1821.	1831.	1841.	1851.
ENGLAND and WALES.	Inhabited .....	1,575,923	1,797,504	2,088,156	2,481,544	2,943,935	3,280,961
	Uninhabited....	57,476	51,020	69,707	119,915	173,247	152,898
	Building .....	not given.	16,207	19,274	24,759	27,444	26,534

## SCOTLAND.

TABLE V.—*Houses and Population in Counties.* 1851.

COUNTIES.	HOUSES.			POPULATION.		
	Inhabited.	Uninhabited.	Building.	Total.	Females.	Males.
SCOTLAND .....	366,650	11,956	2,378	2,870,784	1,363,622	1,507,162
<i>Southern Counties.</i>						
Dumfriesshire .....	13,265	402	92	78,057	37,038	41,019
Kirkcudbright ( <i>Stewartry</i> ) .....	7,406	217	37	43,310	20,166	23,144
Wigtownshire .....	6,897	177	27	43,253	20,191	23,062
Ayrshire .....	24,514	825	127	189,286	92,188	97,098
Buteshire .....	2,325	74	26	16,576	7,485	9,091
Renfrewshire .....	10,736	295	75	159,064	74,671	84,393
Dumbartonshire .....	4,796	237	65	44,923	22,261	22,662
Lanarkshire .....	37,348	1,245	320	532,114	259,214	272,900
Stirlingshire .....	11,423	518	88	85,726	41,649	44,077
Linlithgowshire .....	4,063	117	11	30,044	15,075	14,969
Edinburghshire .....	19,919	849	195	258,824	118,537	140,287
Peeblesshire .....	1,773	96	11	10,582	5,264	5,318
Selkirkshire .....	1,333	23	10	9,797	4,833	4,964
Roxburghshire .....	7,254	220	50	51,570	25,119	26,451
Berwickshire .....	6,361	251	44	36,287	17,357	18,930
Haddingtonshire .....	6,448	419	41	36,396	17,534	18,862
Fifeshire .....	24,644	1,076	134	153,011	72,412	80,599
Kinross-shire .....	1,666	66	12	8,913	4,291	4,622
Clackmannanshire .....	2,967	95	53	22,985	11,347	11,638
<i>Northern Counties.</i>						
Perthshire .....	22,516	852	88	139,216	66,481	72,735
Forfarshire .....	18,828	566	117	174,731	80,275	94,456
Kincardineshire .....	6,678	261	42	34,743	17,065	17,678
Aberdeenshire .....	32,110	768	179	214,658	101,057	113,601
Banffshire .....	10,539	419	62	53,935	25,414	28,521
Elginshire .....	7,606	218	77	38,671	17,961	20,710
Nairnshire .....	2,020	24	20	9,966	4,690	5,276
Invernesshire .....	17,516	371	79	96,328	44,648	51,680
Argyllshire .....	14,880	483	59	88,567	43,357	45,210
Ross-and-Cromartyshire ....	15,526	323	133	82,625	38,751	43,874
Sutherlandshire .....	4,958	52	27	25,771	11,888	13,883
Caithness-shire .....	6,973	95	54	38,542	18,146	20,396
Orkney and Shetland .....	11,362	322	23	62,313	27,257	35,056

SCOTLAND

TABLE VI.—Population enumerated in

No.	COUNTIES	PERSONS.					
		1801.	1811.	1821.	1831.	1841.	1851.
	SCOTLAND .....	1,608,420	1,805,864	2,091,521	2,364,386	2,620,184	2,870,784
	<i>Southern Counties.</i>						
1	Dumfriesshire .....	54,597	62,960	70,878	73,770	72,830	78,057
2	Kirkcudbright ( <i>Stewartry</i> ) .....	29,211	33,684	38,903	40,590	41,119	43,310
3	Wigtownshire .....	22,918	26,891	33,240	36,258	39,195	43,253
4	Ayrshire .....	84,207	103,839	127,299	145,055	164,356	189,286
5	Buteshire .....	11,791	12,033	13,797	14,151	15,740	16,576
6	Renfrewshire .....	78,501	93,172	112,175	133,443	155,072	159,064
7	Dumbartonshire .....	20,710	24,189	27,317	33,211	44,296	44,923
8	Lanarkshire .....	147,692	191,291	244,387	316,819	426,972	532,114
9	Stirlingshire .....	50,825	58,174	65,376	72,621	82,057	85,726
10	Linlithgowshire .....	17,844	19,451	22,685	23,291	26,872	30,044
11	Edinburghshire .....	122,597	148,607	191,514	219,345	225,454	258,824
12	Peeblesshire .....	8,735	9,935	10,046	10,578	10,499	10,582
13	Selkirkshire .....	5,388	5,889	6,637	6,833	7,990	9,797
14	Roxburghshire .....	33,721	37,230	40,892	43,663	46,025	51,570
15	Berwickshire .....	30,206	30,893	33,385	34,048	34,438	36,287
16	Haddingtonshire .....	29,986	31,050	35,127	36,145	35,886	36,396
17	Fifeshire .....	93,743	101,272	114,556	128,839	140,140	153,011
18	Kinross-shire .....	6,725	7,245	7,762	9,072	8,763	8,913
19	Clackmannanshire .....	10,858	12,010	13,263	14,729	19,155	22,985
	<i>Northern Counties.</i>						
20	Perthshire .....	125,583	134,390	138,247	142,166	137,457	139,216
21	Forfarshire .....	99,053	107,187	113,355	139,606	170,453	174,731
22	Kincardineshire .....	26,349	27,439	29,118	31,431	33,075	34,743
23	Aberdeenshire .....	121,065	133,871	155,049	177,657	192,387	214,658
24	Banffshire .....	37,216	38,433	43,663	48,337	49,679	53,935
25	Elginshire .....	27,760	27,967	31,398	34,498	35,012	38,671
26	Nairnshire .....	8,322	8,496	9,268	9,354	9,217	9,966
27	Inverness-shire .....	72,672	77,671	89,961	94,797	97,799	96,328
28	Argyllshire .....	81,277	86,541	97,316	100,973	97,371	88,567
29	Ross-and-Cromartysire .....	56,318	60,853	68,762	74,820	78,685	82,625
30	Sutherlandshire .....	23,117	23,629	23,840	25,518	24,782	25,771
31	Caithness-shire .....	22,609	23,419	29,181	34,529	36,343	38,542
32	Orkney and Shetland .....	46,824	46,153	53,124	58,239	61,065	62,313



ties. 1801, 1811, 1821, 1831, 1841, and 1851.

MALES.						FEMALES.					
	1811.	1821.	1831.	1841.	1851.	1801.	1811.	1821.	1831.	1841.	1851.
1	826,296	982,623	1,114,456	1,241,862	1,363,622	869,329	979,568	1,108,898	1,249,930	1,378,322	1,507,162
7	29,347	33,572	34,829	34,137	37,038	29,190	33,613	37,306	38,941	38,693	41,019
9	15,788	18,506	18,969	18,856	20,166	15,592	17,896	20,397	21,621	22,263	23,144
0	12,205	15,837	17,078	18,290	20,191	12,348	14,686	17,403	19,180	20,905	23,062
5	48,448	61,077	69,717	78,983	92,188	44,592	55,391	66,222	75,338	85,373	97,098
2	5,545	6,474	6,495	7,155	7,485	6,239	6,488	7,323	7,656	8,585	9,091
3	42,234	51,178	61,154	72,859	74,671	42,218	50,938	60,997	72,289	82,213	84,393
6	11,369	13,046	16,321	22,542	22,261	10,914	12,820	14,271	16,890	21,754	22,662
6	88,472	115,385	150,229	208,312	259,214	79,186	102,819	129,002	166,590	218,660	272,900
5	27,745	31,718	35,283	41,004	41,649	26,950	30,429	33,658	37,338	41,053	44,077
9	8,874	10,703	10,995	13,797	15,075	9,715	10,577	11,982	12,296	13,075	14,969
2	65,004	87,759	99,803	102,666	118,537	68,555	83,603	103,755	119,542	122,788	140,287
0	4,846	4,973	5,342	5,118	5,264	4,575	5,089	5,073	5,236	5,381	5,318
8	2,750	3,205	3,394	3,972	4,833	2,870	3,139	3,432	3,439	4,018	4,964
3	17,113	19,408	20,761	21,941	25,119	17,888	20,117	21,484	22,902	24,084	26,451
2	14,527	15,976	16,239	16,558	17,357	16,094	16,366	17,409	17,809	17,880	18,930
0	14,171	16,828	17,397	17,279	17,534	16,096	16,879	18,299	18,748	18,607	18,862
2	45,968	53,540	60,781	65,715	72,412	50,791	55,304	61,016	68,058	74,425	80,599
6	3,466	3,660	4,519	4,195	4,291	3,609	3,779	4,102	4,553	4,568	4,622
4	5,715	6,356	7,095	9,386	11,347	5,794	6,295	6,907	7,634	9,769	11,638
3	63,678	65,642	68,205	65,010	66,481	67,130	70,712	72,605	73,961	72,447	72,735
7	48,115	52,036	65,093	79,343	80,275	53,626	59,072	61,319	74,513	91,110	94,456
4	12,580	13,540	15,016	15,829	17,065	14,245	14,859	15,578	16,415	17,246	17,678
0	59,597	72,214	82,588	89,707	101,057	66,375	74,274	82,835	95,069	102,680	113,601
0	17,292	20,257	22,624	23,249	25,414	20,466	21,141	23,406	25,713	26,430	28,521
6	12,326	1,4397	15,898	16,090	17,961	15,544	15,641	17,001	18,600	18,922	20,710
6	3,651	4,214	4,307	4,231	4,690	4,656	4,845	5,054	5,047	4,986	5,276
1	35,411	42,204	44,510	45,538	44,648	39,601	42,260	47,757	50,287	52,261	51,680
1	41,172	47,775	49,844	47,795	43,357	42,916	45,369	49,541	51,129	49,576	45,210
3	27,640	32,292	34,927	36,779	38,751	30,405	33,213	36,470	39,893	41,906	43,874
5	10,488	11,088	12,090	11,384	11,888	12,692	13,141	12,752	13,428	13,398	13,833
3	10,608	13,693	16,359	17,135	18,146	12,426	12,811	15,488	18,170	19,208	20,396
3	20,151	24,070	26,594	27,007	27,257	26,031	26,002	29,054	31,645	34,058	35,056

## ISLAND IN THE BRITISH SEAS.

TABLE VII.—*Houses and Population on March 31st, 1851.*

ISLANDS.	HOUSES.		
	Inhabited.	Uninhabited.	Building.
ISLANDS IN THE BRITISH SEAS .....	21,826	1,077	202
Jersey .....	7,897	337	69
Guernsey .....	5,318	305	71
Man .....	8,611	435	62

ISLANDS.	POPULATION.		
	Persons.	Males.	Females.
ISLANDS IN THE BRITISH SEAS .....	142,916	66,511	76,405
Jersey .....	57,155	26,360	30,795
Guernsey .....	33,645	15,598	18,047
Man .....	52,116	24,553	27,563

TABLE VIII.—*Population enumerated in the Islands, 1821, 1831, 1841, and 1851.*

ISLANDS.	PERSONS.			
	1821.	1831.	1841.	1851.
ISLANDS IN THE BRITISH SEAS	89,508	103,710	124,040	142,916
Jersey .....	28,600	36,582	47,544	57,155
Guernsey .....	20,827	26,128	28,521	33,645
Man .....	40,081	41,000	47,975	52,116

ISLANDS.	MALES.			
	1821.	1831.	1841.	1851.
ISLANDS IN THE BRITISH SEAS	41,733	48,549	57,556	66,511
Jersey .....	13,056	17,006	21,602	26,360
Guernsey .....	9,519	11,983	12,943	15,598
Man .....	19,158	19,560	23,011	24,553

ISLANDS.	FEMALES.			
	1821.	1831.	1841.	1851.
ISLANDS IN THE BRITISH SEAS	47,775	55,161	66,484	76,405
Jersey .....	15,544	19,576	25,942	30,795
Guernsey .....	11,308	14,145	15,578	18,047
Man .....	20,923	21,440	24,964	27,563

NOTE.—Jersey, Guernsey, and the Isle of Man were not included in the general Censuses of the population in 1801 and 1811.



## IRELAND.

TABLE IX.—*Abstract of the Census of Ireland taken in the Years 1841 and 1851.*

Provinces, Counties, and Towns.		Population.			Increase or Decrease in the Number of Persons between 1841 and 1851.		Decrease per Cent. between 1841 and 1851.	
		1841.	1851.			Increase.		Decrease.
			Males.	Females.	Total.			
LEINSTER.	Carlow .....	86,228	33,059	35,098	68,157	..	18,071	20
	Drogheda Town .....	16,261	7,980	8,896	16,876	615	..	..
	Dublin City .....	232,726	117,222	137,628	254,850	22,124	..	..
	Dublin .....	140,047	68,407	79,099	147,506	7,459	..	..
	Kildare .....	114,488	48,969	47,658	96,627	..	17,861	15
	Kilkenny City .....	19,071	9,238	11,045	20,283	1,212	..	..
	Kilkenny .....	183,349	67,771	72,163	139,934	..	43,415	23
	King's .....	146,857	55,646	57,229	112,875	..	33,982	23
	Longford .....	115,491	41,944	41,254	83,198	..	32,293	28
	Louth .....	111,979	44,476	46,569	91,045	..	20,934	18
	Meath .....	183,828	70,327	69,379	139,706	..	44,122	24
	Queen's .....	153,930	54,704	55,043	109,747	..	44,183	28
	Westmeath .....	141,300	54,419	53,091	107,510	..	33,790	23
Wexford .....	202,033	86,954	93,216	180,170	..	21,863	10	
Wicklow .....	126,143	50,507	48,780	99,287	..	26,856	21	
Total .....		1,973,731	811,623	856,148	1,667,771	31,410	337,370	15 $\frac{5}{10}$
MUNSTER.	Clare .....	286,394	105,153	107,567	212,720	..	73,674	25
	City of Cork .....	80,720	39,565	46,920	86,485	5,765	..	..
	Cork .....	773,398	271,849	279,303	551,152	..	222,246	28
	Kerry .....	293,880	115,812	122,429	238,241	..	55,639	19
	City of Limerick ...	48,391	25,324	29,944	55,268	6,877	..	..
	Limerick .....	281,638	99,712	101,907	201,619	..	80,019	28
	Tipperary .....	435,553	157,054	166,775	323,829	..	111,724	25
	City of Waterford ...	23,216	12,351	14,316	26,667	3,451	..	..
Waterford .....	172,971	66,671	69,165	135,836	..	37,135	21	
Total .....		2,396,161	893,491	938,326	1,831,817	16,093	580,437	23 $\frac{5}{10}$
ULSTER.	Antrim .....	276,188	120,516	129,839	250,355	..	25,833	9
	Armagh .....	232,393	96,341	100,079	196,420	..	35,973	15
	Belfast .....	75,308	46,443	53,217	99,660	24,352	..	..
	Carrickfergus Town ..	9,379	3,746	4,742	8,488	..	891	..
	Cavan .....	243,158	86,835	87,468	174,303	..	68,855	28
	Donegal .....	296,448	124,919	129,369	254,288	..	42,160	14
	Down .....	361,446	151,582	166,196	317,778	..	43,668	12
	Fermanagh .....	156,481	56,731	59,247	115,978	..	40,503	25
	Londonderry .....	222,174	93,123	98,621	191,744	..	30,430	13
	Monaghan .....	200,442	69,584	73,826	143,410	..	57,032	28
	Tyrone .....	312,956	124,415	127,450	251,865	..	61,091	19
Total .....		2,386,873	974,235	1,030,054	2,004,289	24,352	406,436	16
CONNAUGHT.	Galway Town .....	17,275	11,269	13,431	24,697	7,422	..	..
	Galway .....	422,923	146,850	151,279	298,129	..	124,794	29
	Leitrim .....	155,297	56,060	55,748	111,808	..	43,489	28
	Mayo .....	388,887	133,412	141,304	274,716	..	114,171	29
	Roscommon .....	253,591	86,632	87,166	173,798	..	79,793	31
	Sligo .....	180,886	63,158	65,611	128,769	..	52,117	28
Total .....		1,418,859	497,378	514,539	1,011,917	7,422	414,364	28 $\frac{9}{10}$
General Total		8,175,124	3,176,727	3,339,067	6,515,794	Total Decr. 1,659,330		20

Neither of these Abstracts include the Army serving in Ireland.

Number of Persons in 1841..... 8,175,124

Ditto in 1851..... 6,515,794

MISCELLANEOUS.

*Account of the Number of Gallons of Foreign Wine Imported, of the Quantities upon which Duty has been paid for Home Consumption, and the Quantities Exported; also the Quantities retained for Home Consumption, after deducting the Amount Exported subsequently to the Payment of Duty, for the Year ended the 5th day of January, 1851, distinguishing Cape, French, Portugal, Spanish, Madeira, Rhenish, Canary, Fayal, Sicilian, and other sorts; together with the Quantities of each sort remaining in Bond on the 5th day of January, 1851, distinguishing London from the Country;—And of the Number of Proof Gallons of Rum, distinguishing West India, East India, and Foreign; also of Brandy, Geneva, and other Foreign, Colonial, or Jersey Spirits Imported; of the Quantities upon which Duty has been paid for Home Consumption, the Quantities Exported, and the Quantities Shipped as Stores and used by the Navy, for the Year ended the 5th day of January, 1851; together with the Quantities of each sort remaining in Bond on the 5th day of January, 1851, distinguishing London from the Country.*

*Wine Imported, Exported, Retained for Home Consumption, &c., in the Year ended 5th January, 1851.*  
[Sessional Paper, No, 401, 1851.]

UNITED KINGDOM.	Quantities Imported.	Quantities upon which Duty has been paid.	Quantities Exported as Merchandize.	Quantities retained for Home Consumption, after deducting the Amount Exported subsequently to the Payment of Duty.	Quantities remaining in Warehouse under Bond, in the United Kingdom, on 5th January, 1851.		
					At London.	At other Places.	Total.
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.
Cape .....	234,779	246,498	2,543	246,132	147,012	179,366	326,378
French .....	600,243	365,483	173,008	340,748	287,561	172,483	460,044
Portugal .....	3,563,042	2,891,827	329,081	2,814,979	2,586,497	1,610,379	4,196,876
Spanish .....	3,826,785	2,587,116	786,172	2,469,038	2,541,208	1,616,710	4,157,918
Madeira .....	198,311	82,754	132,029	70,360	130,540	29,602	160,142
Rhenish .....	66,843	56,332	13,220	54,668	21,788	8,796	30,584
Canary .....	128,154	16,481	130,854	15,996	14,182	19,029	33,211
Fayal .....	32	245	559	245	1,327	3,468	4,795
Sicilian and other sorts .....	686,123	437,932	91,035	425,056	217,084	299,594	516,678
Mixed in bond .....	...	...	87,217	...	2,663	1,405	4,068
Total.....	9,304,312	6,684,668	1,745,718	6,437,222	5,949,862	3,940,832	9,890,694



5th January, 1851.

UNITED KINGDOM.	Quantities Imported.	Quantities Retained for Home Consumption.	Quantities Exported as Merchandize.	Quantities Shipped as Stores.	Quantities Delivered for the use of the Navy.	Quantities remaining in Warehouse under Bond, in the United Kingdom, on 5th January, 1851,		
						At London.	At other Places.	Total.
	Proof Gallons.	Proof Gallons.	Proof Gallons.	Proof Gallons.	Proof Gallons.	Proof Gallons.	Proof Gallons.	Proof Gallons.
Rum:								
Of British Possessions, viz.—								
West India and Mauritius .....	3,605,259	2,736,658	783,052	99,914	174,686	2,368,275	2,442,823	4,811,098
East India .....	442,907	80,409	119,585	27,599	187,137	358,258	103,776	462,034
West India, Mauritius, and East India, vatted together .....	....	84,937	90,322	59,979	...	27,793	31,426	59,219
Foreign (including Rum of Foreign and British Possessions vatted together) ....	146,517	60	194,126	79	....	79,399	17,472	96,871
All sorts.....	4,194,683	2,902,064	1,187,085	187,571	361,823	2,833,725	2,595,497	5,429,222
Brandy .....	3,237,464	1,860,809	877,607	93,875	515	1,415,149	1,324,046	2,739,195
Geneva .....	337,015	28,237	280,533	12,430	....	13,414	65,557	78,971
Other Foreign and Colonial Spirits .....	381,846	12,300	115,656	101	....	62,866	177,236	240,102
Spirits mixed in Bond .....	....	2	326,399	....	....	4,542	6,703	11,245
Spirits of Heligoland.....	1,764	1,764	....	....	....	....	....	....
Spirits of the Channel Islands (imported previously to the passing of Act 8 & 9 Vict., c. 65, by which Act these Spirits were placed under the management of the Excise) .....	....	4,704	....	....	....	14,082	456	14,538
Total.....	8,152,772	4,809,880	2,787,280	293,977	362,338	4,343,778	4,169,495	8,513,273

*Quantities of Grain, Flour, and Live Stock Imported from each Country and Colony, and the Year*

[Sessional Paper]

COUNTRIES AND COLONIES.	Official Value of Imports into the United Kingdom from the respective Countries and Colonies, exclusive of Grain, Meal, Flour, and Live Stock.	IMPORTED INTO THE UNITED KINGDOM			
		GRAIN, MEAL			
		(The Meal and Flour being converted into the equivalent following proportions: Wheat Flour, 392 lbs.; Oatmeal, 384 lbs. to the Quarter of Grain.)			
		Wheat and Wheat Flour.	Barley and Barley Meal.	Oats and Oatmeal	Rye and Rye Meal
	£	Qrs.	Qrs.	Qrs.	Qrs.
Russia, Northern Ports .....	5,333,406	47,716	47,320	239,828	3,000
"    Ports within the Black Sea .....	289,193	546,501	300	...	...
Sweden and Norway .....	456,194	6,479	10,543	196,224	329
Denmark .....	200,603	241,751	668,517	249,247	77,779
Prussia .....	1,166,386	616,612	342,147	172,203	111,773
Mecklenburg Schwerin .....	24,704	138,427	22,052	442	967
Hanover .....	38,545	21,208	10,408	122,215	2,795
Oldenburg and Kniphausen .....	6,247	7,813	3,170	29,177	7
Hanseatic Towns .....	1,668,724	329,369	148,309	50,944	14,432
Holland .....	2,915,552	306,411	13,360	198,054	2,055
Belgium .....	1,158,067	362,809	522	7,519	6,245
Channel Islands (Foreign Produce) .....	39,362	2,617	225	283	...
France .....	6,464,079	738,833	86,567	1,355	22,930
Portugal Proper .....	558,229	2,870	...	...	...
"    Azores .....	23,174	2,592	...	...	...
"    Madeira .....	22,950	...	...	...	1
Spain and the Balearic Islands .....	1,263,583	498	...	...	1
"    Canary Islands .....	65,948	1	1	...	...
Gibraltar .....	51,881	...	...	...	...
Italy and the Italian Islands, viz. :—					
Sardinian Territories .....	71,040	26,031	...	...	...
Tuscany .....	343,694	70,162	...	...	...
Papal Territories .....	72,262	4,354	...	...	...
Naples and Sicily .....	1,373,009	5,345	...	...	...
Austrian Territories .....	188,275	173,788	...	...	...
Malta and Gozo .....	187,940	8,932	509	...	...
Ionian Islands .....	197,326	...	...	...	...
Kingdom of Greece .....	303,972	53,895	5,532	...	...
Turkish Dominions, exclusive of Wallachia, Moldavia, Syria, Palestine, and Egypt } .....	1,364,017	103,716	13,696	...	1,042
Wallachia and Moldavia .....	14,476	46,972	1,605	...	2,047
Syria and Palestine .....	15,627	12,699	2,794	...	...
Egypt .....	839,264	128,273	2,895	...	...
Algeria .....	...	...	701	...	...
Morocco .....	90,045	1	...	...	...
Africa, British Possessions on the Gold Coast .....	44,083	...	...	...	...
"    West Coast, not particularly designated .....	539,874	...	...	...	...
Cape of Good Hope .....	259,375	1	...	...	...
British Territories in the East Indies .....	12,418,860	1,857	...	1	...
Philippine Islands .....	206,661	...	...	...	...
China (including Hong Kong) .....	6,170,661	4	...	...	...
British Settlements in Australia .....	1,306,482	15,462	...	...	...
British North America .....	1,326,414	141,266	...	23,901	20
British West Indies and British Guiana .....	5,501,720	23	...	...	...
Foreign West Indies; viz. St. Thomas .....	38,420	1	...	...	...
United States of America .....	24,302,064	613,601	...	1,314	11
Brazil .....	3,087,594	1,020	...	...	...
Buenos Ayres .....	1,392,443	...	...	...	...
Chili .....	492,195	17,564	...	...	...
Peru .....	1,037,902	1	...	...	...
Aggregate of the Trade between the United Kingdom and the Countries and Colonies from which Corn and Live Stock were imported in the Year 1849 .....	84,832,522	4,802,475	1,381,073	1,292,707	245,434
Annual Average Price of Grain per Quarter .....	...	s. d. Wheat 44 3	s. d. Barley 27 9	s. d. Oats 17 6	s. Rye 25



ue of the Trade between the United Kingdom and the same Countries and Colonies in 9.

7, 1851.]

M THE RESPECTIVE COUNTRIES AND COLONIES.									Aggregate Official Value of Imports into the United Kingdom from the respective Countries and Colonies.	Declared Value of British Produce and Manufactures Exported from the United Kingdom to the same Countries and Colonies.
FLOUR.			LIVE STOCK.							
Quarters of Grain according to the lbs.; Rye Meal, 424 lbs.; and										
Wheat and Corn Meal.	Other Grain and Meal.	All Sorts.	Oxen and Bulls.	Cows.	Calves.	Sheep and Lambs.	Swine and Hogs.	All Sorts.	£	£
Qrs.	Qrs.	Qrs.	Number.	Number.	Number.	Number.	Number.	Number.		
...	2,869	340,633	...	...	...	...	1	1	5,604,103	1,379,179
5,519	415	572,735	...	...	...	...	...	...	1,294,725	186,996
...	5,228	218,803	...	2	...	2	...	4	601,138	367,363
1,300	72,492	1,311,086	4,027	668	2	355	59	5,111	1,461,704	353,599
...	111,956	1,354,691	...	...	...	...	2	2	2,805,649	428,748
...	15,612	177,500	...	...	...	...	...	...	277,951	106,784
1,344	30,236	188,206	1	...	3	6	...	10	185,287	150,927
...	10,150	50,317	...	...	...	...	...	...	47,422	5,650
...	53,619	596,673	4,229	588	391	850	...	6,058	2,430,824	5,386,246
...	66,859	586,739	10,752	14,504	9,791	122,963	1,920	159,930	3,692,600	3,499,937
67	14,312	391,474	187	68	3,225	4,782	49	8,311	1,787,519	1,457,584
...	20	3,145	89	861	42	10	142	1,144	45,814	634,125
5,264	34,461	1,019,410	1,285	1,156	170	16	14	2,641	8,176,987	1,951,269
1,447	...	64,317	773	...	...	21	11	805	687,881	979,597
7,215	12	19,819	...	...	...	...	...	...	61,342	58,406
...	...	1	1	5	3	4	5	18	22,968	35,009
5,869	3	26,371	539	...	8	...	...	547	1,317,109	623,136
1	...	3	...	...	...	...	...	...	65,951	58,378
...	...	...	...	...	...	1	1	2	51,883	533,481
3,358	1,288	40,677	...	...	...	...	...	...	142,083	740,806
1,507	25	81,694	...	...	...	...	...	...	399,683	777,273
8,927	...	13,281	...	...	...	...	...	...	95,541	202,518
18	62	5,425	...	...	...	...	9	9	1,381,833	1,115,260
0,540	629	264,957	...	...	...	...	...	...	672,562	658,992
8,098	3,031	30,570	...	...	...	...	...	...	243,253	387,744
5,390	...	5,390	...	...	...	...	...	...	207,685	165,805
7,520	4,375	126,322	...	...	...	...	...	...	525,544	288,847
0,730	734	399,918	...	...	4	5	1	10	2,103,708	2,373,669
4,504	...	325,128	...	...	...	...	1	1	636,355	218,577
3,565	...	24,058	...	...	...	...	...	...	57,960	338,366
2,767	248,792	392,727	1	3	...	6	...	10	1,263,784	638,411
...	...	701	...	...	...	...	...	...	613	12,551
760	1	762	...	...	...	...	...	...	91,589	65,101
887	...	887	...	...	...	...	...	...	44,542	134,591
2	...	2	...	...	...	...	...	...	539,875	377,426
...	...	1	...	...	...	10	1	11	259,379	520,896
...	2	1,860	...	43	6	178	105	332	12,421,888	6,803,274
...	...	...	...	...	...	2	5	7	206,664	80,997
...	...	4	...	...	...	5	7	12	6,170,672	1,537,109
...	...	15,462	...	6	...	6	38	50	1,331,974	2,080,364
1,692	14,743	181,622	...	6	...	3	6	15	1,618,913	2,280,386
1	2	26	...	8	...	36	23	67	5,501,791	2,027,390
...	...	1	...	...	...	...	2	2	38,423	383,023
9,571	1,928	1,816,425	...	2	...	5	248	255	26,554,941	11,971,028
1,253	...	2,273	...	...	...	...	...	...	3,089,804	2,444,715
...	...	...	...	...	...	...	3	3	1,392,445	1,362,909
...	...	17,564	...	...	...	...	...	...	520,338	1,089,914
...	...	1	...	...	...	...	...	...	1,037,903	878,251
4,116	693,856	10,669,661	21,884	17,920	13,645	129,266	2,653	185,368	99,170,602	60,152,607
...	s. d Peas 31 2 Beans 30 2	...	...	...	...	...	...	...	...	...

*An Account "of all Guano imported into the United Kingdom in each of the Years 1841 to 1850, inclusive, distinguishing the Quantities imported from each Country respectively."*

[Sessional Paper, No. 204, 1851.]

Countries from which Imported.	Quantities of Guano Imported into the United Kingdom.									
	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	1850.
Norway .....	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Prussia .....	..	..	..	..	..	.. 15	..	..	25	..
Hanseatic Towns .....	..	..	..	..	..	.. 46	..	..	..	.. 62
Belgium .....	..	..	..	149	..	..	..	..	..	412
Channel Islands .....	..	..	..	..	105	160	156	..	..	..
France .....	..	..	..	1	..	..	..	..	477	1,086
Portugal, viz., Azores .....	..	..	..	..	..	..	..	.. 16	..	114
Spain .....	..	..	..	20	..	..	..	23	..	.. 294
Italy .....	..	..	..	..	..	.. 64	..	..	..	..
Turkish Dominions .....	..	..	..	..	..	514	..	..	..	..
Egypt .....	..	..	175	76,898	207,679	5,309	1,146	950	2,345	2,953
Western Coast of Africa .....	..	..	..	253	46,848	4,718	184	..	767	2,626
British Possessions in South Africa ..	..	..	..	..	..	48	..	..	1	..
Eastern Coast of Africa .....	..	..	..	..	2,093	443	401	..	..	..
St. Helena .....	..	..	..	110	307	900	..	..	..	..
British Territories in the East Indies.	..	..	..	600	76	10	6	..	..	..
British North American Colonies....	..	..	..	..	..	174	..	..	..	..
Demerara .....	..	..	..	..	..	1,175	..	..	..	.. 274
United States of America .....	..	..	..	..	..	..	..	..	..	325
Mexico .....	..	..	..	..	431	1,162	250	204	..	184
Brazil .....	..	..	..	..	..	..	..	..	..	489
Buenos Ayres, or Argentine Republic.	..	..	..	..	..	228	21	..	..	..
Oriental Republic of the Uruguay ...	..	..	..	..	11,656	10,430	10,574	6,029	4,311	6,224
Chili .....	819	6,167	1,234	9,743	..	2,692	1,668	3,136	..	1,212
Bolivia .....	..	..	..	..	14,101	22,410	57,762	61,055	73,567	95,083
Peru .....	2,062	14,231	1,589	16,475	..	38,181	10,223	..	1,945	5,587
Patagonia .....	..	..	..	..	..	523	..	..	..	..
Southern Whale Fishery .....	..	..	..	..	..	1	1	1	..	..
Other Parts .....	..	..	4	2	4	..	..	..	..	..
Total of the Quantities Imported..	2,881	20,398	3,002	104,251	283,300	89,203	82,392	71,414	83,438	116,925



*Return of the Shipping employed in the Trade of the United Kingdom, exhibiting the Number and Tonnage of Vessels that entered Inwards and cleared Outwards (including their repeated Voyages), separating British from Foreign Vessels, also Steam from Sailing Vessels, and distinguishing the Trade with each Country, in the Year 1850.*

[Sessional Paper, No. 155, 1851.]

		Inwards.				Outwards.			
		BRITISH.		FOREIGN.		BRITISH.		FOREIGN.	
		Ships.	Tonnage.	Ships.	Tonnage.	Ships.	Tonnage.	Ships.	Tonnage.
Russia .....	{ Steam	22	10,342	...	...	20	9,271	...	...
	{ Sailing	1,749	363,673	783	178,941	1,385	279,991	483	100,153
Sweden.....	{ Steam	13	3,185	...	...	13	3,185	...	...
	{ Sailing	155	24,133	513	86,134	161	23,937	390	54,866
Norway.....	{ Steam	11	1,271	966	152,350	38	5,206	1,128	179,908
	{ Sailing	43	16,776	10	1,700	6	1,416	8	1,360
Denmark .....	{ Steam	263	27,625	1,919	140,662	757	104,560	3,638	370,038
	{ Sailing	1	259	8	1,880	...	...	6	1,410
Prussia .....	{ Steam	1,150	150,225	1,207	213,095	824	109,097	923	162,086
	{ Sailing	328	124,039	151	49,216	332	124,318	152	50,494
Germany .....	{ Steam	1,052	202,323	1,703	144,437	1,052	206,321	1,905	146,223
	{ Sailing	807	200,979	109	25,689	620	152,684	105	24,857
Holland .....	{ Steam	1,113	151,038	999	106,120	1,028	142,291	869	61,695
	{ Sailing	483	86,518	280	47,816	485	85,993	278	47,678
Belgium .....	{ Steam	480	36,737	318	47,603	313	20,038	177	20,509
	{ Sailing	2,020	298,280	378	49,148	2,069	315,063	366	49,088
France .....	{ Steam	2,945	308,083	3,894	307,850	2,497	289,469	3,602	260,193
	{ Sailing	6	1,624	1	900	6	1,471	...	...
Portugal, Azores, &c.	{ Steam	773	74,652	142	14,407	708	73,046	238	32,641
	{ Sailing	1	174	...	...	1	615	...	...
Spain, Canaries, &c...	{ Steam	615	65,129	139	18,118	948	159,600	357	62,870
	{ Sailing	35	10,617	...	...	35	10,615	...	...
Gibraltar .....	{ Steam	11	1,163	...	...	137	16,449	44	7,478
	{ Sailing	29	7,225	...	...	32	8,142	...	...
Italian States .....	{ Steam	561	76,110	227	49,399	690	114,196	393	98,778
	{ Sailing	...	...	...	...	...	...	...	...
Malta .....	{ Steam	47	6,461	2	533	125	26,220	143	39,748
	{ Sailing	77	10,109	1	170	34	5,095	22	7,576
Ionian Islands.....	{ Steam	99	13,713	9	2,212	68	12,200	40	11,633
	{ Sailing	41	19,180	...	...	42	18,772	...	...
Greece .....	{ Steam	280	50,195	66	16,311	266	54,657	162	45,963
	{ Sailing	2	434	...	...	...	...	...	...
Turkish Dominions...	{ Steam	101	16,604	75	16,698	76	11,809	25	4,159
	{ Sailing	44	6,999	8	2,084	46	7,651	1	403
Wallachia & Moldavia	{ Steam	13	14,957	...	...	12	14,854	...	...
	{ Sailing	623	170,040	100	31,491	509	140,240	125	28,681
Syria .....	{ Steam	...	...	...	...	1	327	...	...
	{ Sailing	782	397,140	14	7,395	958	499,919	69	34,596
Africa .....	{ Steam	...	...	...	...	...	...	...	...
	{ Sailing	...	...	...	...	...	...	...	...
Asia .....	{ Steam	...	...	...	...	...	...	...	...
	{ Sailing	...	...	...	...	...	...	...	...
America, viz.:—	{ Steam	...	...	...	...	1	238	...	...
British Northern Colonies .....	{ Sailing	2,036	798,080	170	67,580	1,336	480,041	43	15,930
	{ Steam	5	5,931	...	...	9	10,153	...	...
British West Indies	{ Sailing	705	189,817	20	5,853	751	198,990	15	4,170
	{ Steam	4	4,404	...	...	15	17,171	...	...
Foreign West Indies	{ Sailing	269	67,371	123	29,176	298	74,457	178	42,993
	{ Steam	47	45,386	22	28,410	49	48,432	21	27,246
United States .....	{ Sailing	423	248,137	684	537,471	957	448,385	849	631,274
	{ Steam	...	...	...	...	...	...	...	...
Mexico .....	{ Sailing	31	16,561	5	1,149	101	39,308	8	2,473
	{ Steam	17	19,758	...	...	3	2,532	...	...
Central & Southern States .....	{ Sailing	680	192,778	65	14,614	741	238,706	128	32,009
	{ Steam	...	...	...	...	...	...	...	...
Russian Settlements on North-West Coast .....	{ Sailing	...	...	...	...	1	224	1	507
	{ Steam	...	...	...	...	...	...	...	...
Whale Fisheries .....	{ Sailing	46	12,155	1	130	54	13,476	...	...
	{ Steam	359	56,701	...	...	323	50,934	...	...
Channel Islands .....	{ Sailing	1,312	95,108	33	3,535	1,056	70,560	8	557
	{ Steam	...	...	...	...	...	...	...	...
Total.....		22,709	4,700,199	15,145	2,400,277	21,989	4,742,345	16,900	2,662,243

*Return, by the Land and Emigration Commissioners, of the Emigration from the United Kingdom during the Twenty-six Years from 1825 to 1850 inclusive.*

Years.	To the North Ameri- can Colonies.	To United States.	To Australian Colonies and New Zealand.	To all other Places.	Total.
1825.....	8,741	5,551	485	114	14,891
1826.....	12,818	7,063	903	116	20,900
1827.....	12,648	14,526	715	114	28,003
1828.....	12,084	12,817	1,056	135	26,092
1829.....	13,307	15,678	2,016	197	31,198
1830.....	30,574	24,887	1,242	204	56,907
1831.....	58,067	23,418	1,561	114	83,160
1832.....	66,339	32,872	3,733	196	103,140
1833.....	28,808	29,109	4,093	517	62,527
1834.....	40,060	33,074	2,800	288	76,222
1835.....	15,573	26,720	1,860	325	44,478
1836.....	34,226	37,774	3,124	293	75,417
1837.....	29,884	36,770	5,054	326	72,034
1838.....	4,577	14,332	14,021	292	33,222
1839.....	12,658	33,536	15,786	227	62,207
1840.....	32,293	40,642	15,850	1,958	90,743
1841.....	38,164	45,017	32,625	2,786	118,592
1842.....	54,123	63,852	8,534	1,835	128,344
1843.....	23,518	28,335	3,478	1,881	57,212
1844.....	22,924	43,660	2,229	1,873	70,686
1845.....	31,803	58,538	830	2,330	93,501
1846.....	43,439	82,239	2,347	1,826	129,851
1847.....	109,680	142,154	4,949	1,487	258,270
1848.....	31,065	188,233	23,904	4,887	248,089
1849.....	41,367	219,450	32,191	6,490	299,498
1850.....	32,961	223,078	16,037	8,773	280,849
1851.... } To March 31 }	....	....	....	....	56,584
Total.....	....	....	....	....	2,622,617

The Return does not distinguish the Emigrants born in Great Britain from those born in Ireland.

From this Return it may be inferred that the Emigration from the United Kingdom was not less than—

717,913 in the interval of the Censuses 1831 and 1841, and  
1,692,063 in the interval of the Censuses 1841 and 1851.



*Account of the Quantities and declared Value of British Hardwares and Cutlery exported from the United Kingdom, in the Year 1850, ending 5th January, 1851.*

[Sessional Paper, No. 498, 1851.]

Countries to which Exported.	British Hardwares and Cutlery.						
	Quantity.				Declared Value.		
	Tons	cwts.	qrs.	lbs.	£	s.	d.
Russia.....	485	17	1	24	60,772	5	2
Sweden .....	73	1	2	20	8,133	17	1
Norway .....	83	14	0	25	8,928	7	9
Denmark.....	118	2	0	14	13,571	17	8
Prussia .....	87	15	0	27	9,041	12	6
Mecklenburg .....	2	10	2	27	85	2	6
Hanover .....	5	8	3	25	765	10	0
Hanseatic Towns .....	1,075	11	2	22	151,170	7	0
Holland .....	336	10	0	0	52,809	13	4
Belgium .....	273	5	1	15	41,607	12	0
Channel Islands.....	257	5	2	27	27,053	11	11
France.....	757	10	1	5	98,485	16	2
Portugal, Azores, and Madeira.....	161	5	1	25	19,345	10	0
Spain and the Canaries .....	378	12	0	9	45,740	19	3
Gibraltar.....	82	9	2	8	11,467	15	6
Italy .....	558	3	3	15	74,638	8	9
Malta .....	40	6	1	9	6,686	9	0
Ionian Islands .....	32	11	0	26	3,458	2	0
Greece.....	19	3	2	6	1,763	0	0
Turkish Dominions, exclusive of Wallachia, Moldavia } Syria, Palestine, and Egypt .....	322	8	2	5	39,603	2	9
Wallachia and Moldavia .....	16	0	1	2	1,276	10	0
Syria and Palestine .....	17	12	0	19	1,393	7	0
Egypt .....	72	19	3	4	13,065	12	0
Algeria .....	0	1	0	0	15	0	0
Morocco .....	4	14	2	2	718	0	0
Western Coast of Africa .....	253	3	2	20	21,198	2	1
British Possessions in South Africa .....	458	4	2	9	35,574	2	10
Eastern Coast of Africa .....	..	..	..	..	..	..	..
Cape Verde Islands .....	0	18	1	0	75	10	0
St. Helena and Ascension Islands .....	2	14	3	6	333	10	0
Mauritius .....	111	19	1	20	11,777	5	6
Aden .....	0	2	0	0	30	0	0
British Territories in the East Indies .....	1,293	14	1	4	135,071	19	2
French Possessions in India (Pondicherry) .....	0	1	1	0	5	5	0
Java .....	131	11	0	10	13,029	5	0
Philippine Islands .....	40	12	3	9	4,073	0	0
China, including Hong Kong .....	25	9	2	20	5,561	2	6
British Settlements in Australia .....	1,198	15	3	13	115,532	8	11
South Sea Islands .....	18	4	3	5	1,226	10	0
British Northern Colonies .....	1,629	7	3	9	138,633	16	10
British West Indies and British Guiana.....	712	5	0	6	55,232	14	4
Foreign West Indies .....	1,142	11	3	8	66,124	2	3
United States of America .....	9,675	9	1	11	1,049,903	0	9
Mexico .....	282	8	1	18	33,095	7	3
Central America.....	61	6	0	13	5,327	10	0
New Granada .....	186	10	2	15	15,337	10	0
Venezuela .....	226	3	0	7	10,517	0	0
Ecuador .....	34	16	1	15	2,197	0	0
Brazil .....	1,291	8	0	4	80,972	12	11
Oriental Republic of the Uruguay .....	55	14	2	22	2,321	0	0
Buenos Ayres.....	1,005	12	0	2	68,232	10	0
Chili .....	592	0	3	8	38,546	2	0
Peru .....	349	11	1	8	39,614	6	0
Falkland Islands .....	0	9	2	0	57	0	0
Russian Settlements on the North-west Coast of America	1	11	3	16	235	0	0
Total .....	25,746	1	1	23	2,641,432	2	8

*Declared Value of British Machinery and Mill Work Exported from the United Kingdom, distinguishing the Countries to which Exported, in the Year 1850, ending 5th January, 1851.*

Countries to which Exported.	Declared Value of British Machinery and Mill Work.			Countries to which Exported.	Declared Value of British Machinery and Mill Work.		
	£	s.	d.		£	s.	d.
Russia .....	203,991	12	0	Cape Verde Islands ....	10	12	0
Sweden .....	21,967	6	6	St. Helena .....	30	0	0
Norway .....	12,174	19	6	Mauritius .....	18,149	10	0
Denmark .....	30,610	0	0	Aden .....	24	0	0
Prussia .....	5,865	10	0	British Territories in } the East Indies .... }	49,970	6	3
Hanover .....	2,272	0	0	Java .....	14,152	0	0
Oldenburg .....	1,195	0	0	Philippine Islands ....	3,759	0	0
Hanseatic Towns .....	84,534	12	6	China, including Hong } Kong .....	648	0	0
Holland .....	18,735	0	6	British Settlements in } Australia .....	20,291	18	6
Belgium .....	22,636	1	0	British Northern Co- } lonies .....	6,155	19	0
Channel Islands .....	1,674	1	0	British West Indies } and British Guiana }	36,421	3	3
France .....	59,106	18	0	Foreign West Indies ....	83,508	5	0
Portugal, Azores, and } Madeira .....	13,903	17	0	U. S. of America .....	27,318	11	0
Spain and the Canaries	73,167	9	5	Mexico .....	9,044	0	0
Gibraltar .....	269	10	0	Central America .....	6,607	10	0
Italy .....	117,349	1	0	New Granada .....	873	0	0
Malta .....	8,002	0	0	Venezuela .....	65	0	0
Ionian Islands .....	27	0	0	Brazil .....	29,000	10	0
Greece .....	1,650	2	0	Oriental Republic of } the Uruguay .....	384	0	0
Turkish Dominions, ex- } clusive of Wallachia, } Moldavia, Syria, Pa- } lestine, and Egypt .... }	14,098	0	0	Buenos Ayres .....	1,058	0	0
Wallachia and Moldavia	78	0	0	Chili .....	3,364	0	0
Syria and Palestine .....	174	0	0	Peru .....	11,971	0	0
Egypt .....	22,483	2	6	Falkland Islands .....	20	0	0
Morocco .....	130	0	0				
Western Coast of Africa	1,056	4	0				
British Possessions in } South Africa .....	2,189	2	0	Total .....	£ 1,042,166	13	11

*An Account of the Total Number of Quarters of Malt made between the 10th day of October, 1849, and the 10th day of October, 1850; distinguishing the Quantity made in each Country, and the Quantity used by Brewers and by Victuallers, and by Retail Brewers.*

[Sessional Paper, No. 173, 1851.]

	Year ended 10th October, 1850.			
	Quarters of Malt made.	Quarters of Malt used.		
		By Brewers and Victuallers.	By Retail Brewers.	Total.
England .....	4,396,972	3,119,400	403,266	3,522,666
Scotland .....	571,635	118,750	....	118,750
Ireland .....	215,010	145,587	....	145,587
The United Kingdom ....	5,183,617	3,383,737	403,266	3,787,003



**THE MARRIAGES, BIRTHS, AND DEATHS,  
REGISTERED IN THE DIVISIONS, COUNTIES, AND DISTRICTS OF ENGLAND,**

AS PUBLISHED BY AUTHORITY OF THE REGISTRAR-GENERAL.

THIS Return comprises the Births and Deaths registered by 2,189 registrars in all the districts of England during the Winter quarter ending March 31st, 1851; and the Marriages in more than 12,000 churches or chapels, 2,869 registered places of worship unconnected with the Established Church, and 623 Superintendent Registrars' offices, in the quarter that ended December 31st, 1850. The return of marriages is not complete; but the defects are inconsiderable, and have been supplied from previous years.

The results of the returns from the whole country are satisfactory. The mortality is low; the births and the marriages are much above the average.

Of marriages, 45,296 were celebrated in the autumn quarter, ending December 31st. The marriages are always more numerous in this quarter than in any other quarter of the year. The close of harvest, the genial season of Christmas, the termination of the ordinary periods of service, and perhaps the old practice of anticipating Lent, swell the marriage roll at the end of the year. So there is nothing very remarkable in the distribution of the marriages over the quarters of the year 1850, although the marriages in the last quarter exceeded those in the first quarter of the year by nearly 15,000. The marriages of the whole year exhibit an extraordinary increase; in 1840, the number was 122,665; in 1850, it amounted to 152,235. In the four years 1847-8-9-50, the marriages were 135,845, 138,230, 141,599, and 152,235. The first (1847) was a year of great depression and great suffering; the last (1850), as the marriages testify, was a year of prosperity, which showed no symptoms of decline in the last quarter.

The marriages decreased, were stationary, or increased slowly, in many agricultural districts; and this implies a certain degree of depression in those parts at the close of the year 1850. In many of the manufacturing districts, the increase was remarkable. In the country generally, the great increase in the marriages indicates that the great body of the people were in prosperous circumstances. The classes who live on wages should now husband their resources, and with their surplus earnings provide against the periods of depression which, according to past experience, invariably follow years of prosperity.

Of births, 157,374 were registered in the quarter ending March 31st, 1851. This is a greater number of births than was ever registered in any previous quarter; and the increase is distributed over all the divisions of the country, although it was greatest in Cheshire, Lancashire, and Yorkshire. In a few counties, the births exhibit no increase; in the majority, the increase is considerable.

As 157,374 births and 105,446 deaths were registered in the quarter ending March 31st, 1851, an excess is left of 51,928 living. It is the natural increase of the population in three months. And as all the deaths are registered, while all the births are not registered, the difference is less than the actual increase. The variations in the increase of population from fluctuations in the births and deaths since 1847 have been considerable; the excess of births over deaths was 19,704 in the winter quarter ending March 1848, and 51,928 in the corresponding quarter of 1851.

The emigration in the quarter ending March 31st, 1851, from the ports of the United Kingdom at which there are government emigration officers, was 56,072. The emigrants from English ports amounted to 48,929; namely, 1,515 from Plymouth, 4,502 from London, and 42,912 from Liverpool; 2,339 emigrants sailed

from Glasgow and Greenock; 4,804 from Irish ports. It is well known that many Irish emigrants sail from Liverpool\*.

STATE OF THE PUBLIC HEALTH.—105,446 deaths were registered in the quarter ending March 31st. This number is less by nearly 15,000 than was registered in the corresponding quarters of 1847 and 1848, and more by 7,000 than was registered in the March quarter of 1850. Taking the increase of population into account, the mortality was slightly below the average. It was at the rate of 2·365 per cent. per annum; whereas the average rate of the quarter is 2·457 per cent. The highest rate of mortality experienced in any winter quarter since 1839 was 2·830, in the cold winter quarter of 1847; the lowest was 2·144, in the mild winter quarter of 1846. The average annual rate of mortality in winter is 2½ per cent. nearly (2·457); the mortality being above this range in town, and below it in country districts. The mortality in the March quarter was somewhat lower than the average in the 117 districts, including the chief towns; and considerably below the average in the 506 remaining country districts. The mortality of the towns was a fiftieth part, and of the country districts a twelfth part, less than the average. The country districts are therefore enjoying more than their usual immunity, while the mortality in the town districts is scarcely reduced at all; yet it was in the town districts that cholera was most fatal, and, according to a common theory, cut off the weakly lives in 1849. The returns show that little impression has yet been made on the mortality of towns, which have practically been left unimproved. The drains, sewers, slaughter-houses, and churchyards, are much the same as they were, and their effects therefore are the same.

The mortality was higher in London than it was in the corresponding quarter of last year. Influenza was epidemic; and the mortality was raised during the weeks of March; 205 deaths were directly ascribed to this disease, which in ordinary seasons is not fatal to more than 50; and many of the 1,612 deaths ascribed to bronchitis were the result of influenza. The epidemic has ceased, and has been slight, compared with that of 1847-8. Measles and whooping-cough have been more, scarlatina less, than usually fatal. Small-pox was fatal in 275 cases, in the greater part of which vaccination had been neglected. Diarrhœa was fatal to 223 persons, dysentery to 30, cholera to 7. It is worthy of note that the winter diarrhœa shows no disposition to decline. The deaths referred to cholera in the five quarters ending March 1847-51, were 3, 9, 516, 8, and 7. Typhus has been more fatal than it was in the March quarter of 1850. The deaths by poison were 29, burns and scalds 100, hanging and suffocation 71, drowning 70, fractures and contusions 163, wounds 34.

*Marriages Registered in the Quarters ending December 31st, 1846-50; Births and Deaths Registered in the Quarters ending March 31st, 1847-51, in the Divisions, Counties, and Districts of England.*

Population.	Marriages.	Births.	Deaths.
	Registered in the Quarter ending the last Day of		
	December,	March,	March,
1831..... 13,896,797	1846..... 42,066	1847..... 146,453	1847..... 119,686
	1847..... 40,729	1848..... 139,736	1848..... 120,032
1841..... 15,914,148	1848..... 42,116	1849..... 153,705	1849..... 106,069
	1849..... 43,632	1850..... 144,602	1850..... 98,607
Military 29,846	1850..... 45,296	1851..... 157,374	1851..... 105,446

\* Return with which the Registrar-General has been favoured by the Emigration Commissioners.



## MORTALITY OF THE METROPOLIS.

*A Table of the Mortality in the Metropolis, showing the Number of Deaths from all Causes, in the Quarters ending March of the Four Years, 1848-49-50-51.*

CAUSES OF DEATH.	Quarters ending March				CAUSES OF DEATH.	Quarters ending March			
	1848.	1849.	1850.	1851.		1848.	1849.	1850.	1851.
ALL CAUSES.....	16,455	15,438	13,219	15,410	III. Scrofula.....	89	74	72	87
SPECIFIED CAUSES.....	16,366	15,331	13,136	15,323	Tabes Mesenterica..	233	198	158	175
I. Zymotic Diseases....	4,203	4,120	2,126	2,999	Phthisis or Con- } sumption..... }	1,873	1,630	1,626	1,792
SPORADIC DISEASES.					Hydrocephalus....	390	380	370	418
II. Dropsy, Cancer, and } other Diseases of } uncertain or va- } riable Seat..... }	576	643	606	631	IV. Cephalitis.....	138	145	135	138
III. Tubercular Diseases..	2,585	2,382	2,226	2,472	Apoplexy.....	364	314	376	314
IV. Diseases of the Brain, } Spinal Marrow, } Nerves, and Senses }	1,786	1,687	1,638	1,634	Paralysis.....	326	326	366	280
V. Diseases of the Heart } and Blood-Vessels }	476	523	544	665	Delirium Tremens..	39	41	21	30
VI. Diseases of the } Lungs and of the } other Organs of } Respiration..... }	3,357	2,986	2,802	3,522	Chorea.....	2	1	7	2
VII. Diseases of the Sto- } mach, Liver, and } other Organs of } Digestion..... }	856	792	763	815	Epilepsy.....	91	94	75	82
VIII. Diseases of the Kid- } neys, &c..... }	181	164	165	156	Tetanus.....	1	5	4	7
IX. Childbirth, Diseases } of the Uterus, &c. }	129	123	122	106	Insanity.....	31	22	19	32
X. Rheumatism, Dis- } eases of the Bones, } Joints, &c..... }	83	121	101	109	Convulsions.....	634	561	482	572
XI. Diseases of the Skin, } Cellular Tissue, &c }	22	15	24	22	Disease of Brain, &c.	160	178	153	177
XII. Malformations.....	57	48	43	42	V. Pericarditis.....	36	31	32	47
XIII. Premature Birth & } Debility..... }	301	301	320	390	Aneurism.....	15	20	24	20
XIV. Atrophy.....	339	282	277	283	Disease of Heart....	425	472	488	598
XV. Age.....	744	662	690	686	VI. Laryngitis.....	46	69	54	73
XVI. Sudden*.....	184	167	234	218	Bronchitis.....	1,342	1,271	1,284	1,612
XVII. Violence, Privation, } Cold, and Intem- } perance..... }	487	415	455	573	Pleurisy.....	62	49	41	71
					Pneumonia.....	1,416	1,202	1,011	1,244
I. Small Pox.....	388	228	95	275	Asthma.....	317	270	300	383
Measles.....	465	173	303	363	Disease of Lungs, &c	174	125	112	139
Scarlatina.....	615	776	199	206	VII. Teething.....	134	150	139	194
Hooping Cough.....	374	905	442	781	Quinsey.....	35	26	17	18
Croup.....	90	77	79	109	Gastritis.....	31	20	28	18
Thrush.....	40	38	25	34	Enteritis.....	123	101	88	87
Diarrhoea.....	244	254	207	223	Peritonitis.....	74	62	57	54
Dysentery.....	44	42	43	30	Ascites.....	34	19	30	33
Cholera.....	9	516	8	7	Ulceration (of In- } testines, &c.).. }	38	26	23	27
Influenza.....	578	53	38	205	Hernia.....	33	39	37	40
Purpura and Scurvy.....	23	16	8	9	Ileus.....	35	23	30	30
Ague.....	7	6	3	3	Intussusception....	8	16	13	9
Remittent Fever.....	19	19	20	32	Stricture of the In- } testinal Canal.. }	6	8	14	9
Infantile Fever†....	18	4	11	18	Dis. of Stomach, &c.	95	79	76	64
Typhus.....	922	699	404	521	Disease of Pancreas	1	..	..	4
Metria, or Puer- } peral Fever, see } Childbirth..... }	169	112	60	47	Hepatitis.....	52	49	44	55
Rheumatic Fever, } see Rheumatism }	19	8	21	19	Jaundice.....	31	44	30	40
Erysipelas.....	196	137	119	81	Disease of Liver....	123	129	134	131
Syphilis.....	34	22	32	32	Disease of Spleen..	3	1	3	2
Noma or Canker, } see Mortification }	8	5	8	4	VIII. Nephritis.....	7	7	6	9
Hydrophobia.....	1	..	1	..	Nephria (or } Bright's Disease) }	41	25	34	40
II. Hæmorrhage.....	35	53	55	45	Ischuria.....	1	2	2	5
Dropsy.....	198	248	214	231	Diabetes.....	15	10	10	9
Abscess.....	31	27	30	24	Stone.....	8	10	12	4
Ulcer.....	16	12	12	21	Cystitis.....	11	8	7	12
Fistula.....	6	4	3	7	Stricture of Urethra	13	9	13	12
Mortification.....	58	60	59	56	Dis. of Kidneys, &c.	85	93	81	65
Cancer.....	222	231	213	236	IX. Paramenia.....	4	5	4	3
Gout.....	10	8	20	11	Ovarian Dropsy....	16	16	16	8
					Childbirth, see Metria	67	64	66	65
					Dis. of Uterus, &c...	42	38	36	30
					X. Arthritis.....	1	1	3	3
					Rheumatism.....	40	66	60	60
					Disease of Joints, &c.	42	54	38	46
					XI. Carbuncle.....	4	1	2	3
					Phlegmon.....	5	3	7	5
					Disease of Skin, &c.	13	11	15	14
					XVII. Intemperance....	17	21	18	23
					Privation.....	18	13	8	13
					Want of Breast } Milk, see Privation }	45	28	40	56
					Neglect.....	2	..	2	1
					Cold, see Privation..	4	4	1	4
					Poison.....	29	15	20	29
					Burns and Scalds..	77	76	106	100
					Hanging, &c.....	56	36	45	71
					Drowning.....	53	66	48	70
					Fractures and Con- } tusions..... }	139	114	139	163
					Wounds.....	33	26	19	34
					Other Violence....	14	16	9	9
					Causes not specified	89	107	83	87

\* Under the head of "sudden deaths," are classed not only deaths described as sudden, of which the cause has not been ascertained or stated; but also all deaths returned by the Coroner in vague terms, such as "found dead," "natural causes," &c., &c.

† In the years previous to 1848, "Worms" and "Infantile Fever" were classed together. The former, of very rare occurrence, is now placed to diseases of stomach, &c.

METEOROLOGICAL TABLE for the Quarter ending March 31, 1851.

NAMES OF THE PLACES.	Mean Pressure of Dry Air reduced to the level of the Sea.	Mean Tempera- ture of the Air.	Highest Reading of the Thermo- meter.	Lowest Reading of the Thermo- meter.	Mean daily Range of Temperature.	Mean monthly Range of Temp.	Range of Tempera- ture in the Quarter.	Mean Tempera- ture of the Dew Point.	WIND.		Mean Amount of Cloud.	RAIN.		Mean additional weight required to saturate a cu- bic foot of Air.	Mean Degree of Humidity.	Mean whole amt. of Water in a Vertical Column of Water in a Cubic Foot of Air.	Mean Weight of a Cubic Foot of Air.	Height of Cistern of Barom. above level of the Sea.
									Mean Strength.	General Direction.		No. of days on which it fell.	Amount collected.					
Jersey .....	29.683	45.5	61.0	32.0	12.1	28.3	29.0	41.8	1.8	S.E. & S.W.	5.6	49	9.9	3.3	0.889	3.9	544	75
Guernsey.....	29.643	45.3	53.5	34.0	6.0	16.2	19.5	42.4	1.6	W.S.W.	5.8	44	12.2	3.3	0.910	4.1	542	123
Helston.....	29.575	46.6	60.0	32.0	10.7	25.0	28.0	42.5	1.8	S.W.	6.5	62	14.4	3.3	0.873	4.0	539	106
Falmouth.....	..	45.8	60.0	29.0	12.9	26.3	31.0	..	1.4	S.S.W.	7.2	60	14.8	..	..	..	..	..
Truro.....	29.661	45.5	57.0	27.0	11.6	27.0	30.0	41.9	0.9	S.W.	6.3	62	18.1	3.4	0.861	3.9	543	55
Torquay.....	..	46.2	58.0	32.0	7.8	21.7	26.0	42.2	2.8	S., N.E. & N.W.	..	52	11.4	3.3	0.855	3.8	544	150
Exeter.....	..	44.5	58.2	23.6	13.6	29.8	34.6	40.7	2.1	W.S.W.	5.0	59	9.9	3.7	0.878	3.7	544	140
Midhurst.....	..	41.4	52.0	21.0	..	27.7	31.0	38.9	2.7	S.W.	6.5	48	9.1	3.0	0.918	3.5	546	..
Chichester.....	..	40.5	55.0	25.0	10.9	24.7	30.0	33.3	..	W.S.W.	..	8.2	8.2	..	..	3.1	..	..
Southampton.....	29.583	42.9	56.4	25.9	10.4	25.5	30.5	39.6	0.5	..	6.8	43	10.5	3.0	0.901	3.6	544	60
Lewisham.....	29.647	42.0	59.6	23.0	10.9	29.8	36.6	37.9	0.6	S.W.	7.1	51	8.1	2.9	0.873	3.4	545	82
Royal Observatory, Greenwich	29.651	41.9	58.4	23.7	11.8	30.6	34.7	37.2	..	S.W.	..	50	8.0	2.8	0.859	3.3	545	160
Maidenstone Hill, Greenwich	29.667	41.7	56.1	23.6	9.4	27.3	32.5	38.9	..	S.W.	6.8	44	8.1	3.0	0.910	3.5	546	107
Camberwell.....	..	42.2	55.0	25.0	8.7	26.3	30.0	40.2	3.1	S.W.	8.1	43	6.6	3.1	0.938	3.7	..	..
Chislehurst Street, London.....	..	45.7	65.0	31.5	9.9	31.5	33.5	40.8	..	S.W. & N.E.	..	48	7.8	3.1	0.836	3.7	542	..
St. John's Wood.....	29.635	41.4	57.7	24.0	12.3	28.6	33.7	37.8	1.3	S.W. & N.E.	7.7	47	8.8	2.9	0.896	3.4	545	150
Rose Hill, Oxford.....	29.646	41.7	54.5	22.4	12.6	29.3	32.1	38.3	2.3	S.W.	6.9	45	7.5	2.9	0.885	3.5	543	270
Thame.....	29.615	40.8	60.3	23.0	11.2	30.5	37.3	38.0	1.0	S.W.	6.5	47	7.2	3.0	0.909	3.4	543	230
Radcliffe Observatory, Oxford	29.627	41.9	55.9	24.2	12.5	25.9	31.7	38.3	2.2	S.W.	7.5	47	7.2	3.0	0.891	3.4	543	210
Stone Observatory.....	29.583	40.4	57.0	24.5	10.5	26.9	32.5	36.9	1.0	S.W.	6.3	56	7.6	2.8	0.886	3.3	542	320
Hartwell House.....	29.592	41.9	59.8	22.5	14.0	31.3	37.3	39.4	0.3	S.W.	7.0	..	..	3.0	0.919	3.5	542	250
Hartwell Rectory.....	29.595	40.5	58.5	24.2	12.5	29.0	34.3	36.9	0.8	S.W.	5.9	60	7.8	2.8	0.881	3.3	543	290
Linslade, Bucks.....	29.632	40.3	56.5	21.5	12.2	30.0	35.0	37.0	..	S.W.	..	50	7.1	2.8	0.888	3.3	541	313
Cardington (near Bedford) ..	29.624	41.1	56.5	22.5	12.4	29.5	34.0	37.0	0.9	W.S.W.	6.6	43	5.0	2.8	0.860	3.3	544	100
Bedford.....	29.627	41.5	57.0	22.5	13.0	29.5	34.5	37.1	1.0	W.S.W.	6.4	47	5.6	2.8	0.840	3.3	544	100
Norwich.....	29.604	41.3	57.0	24.0	12.0	29.0	33.0	37.3	..	S.W.	6.9	56	6.6	2.8	0.860	3.3	547	39
Leicester Museum.....	29.536	41.3	56.0	29.0	9.8	24.0	27.0	37.8	1.3	W.	7.5	40	3.4	2.9	0.892	3.4	543	175
Holkham.....	29.605	40.2	56.6	22.5	11.2	29.0	34.1	38.1	1.0	W.S.W.	7.1	54	5.5	2.9	0.929	3.4	548	39
Grantham.....	29.597	41.0	55.5	26.5	9.6	26.3	29.0	37.7	..	S.W.	6.9	47	5.6	2.9	0.900	3.3	544	190
Derby.....	..	40.6	56.0	24.0	12.3	29.3	32.0	38.1	..	S.W.	..	66	6.6	2.9	0.921	3.4	545	..
Highfield House, Notts.....	29.656	40.6	61.0	23.5	14.5	32.2	37.5	36.7	0.6	S.S.W.	6.9	49	5.7	2.8	0.866	3.4	546	203
Hawarden.....	29.551	41.0	56.1	29.0	10.9	23.9	26.1	38.2	1.8	W.S.W.	6.9	41	7.5	2.9	0.923	3.4	544	260
Gainsborough.....	29.577	40.7	59.0	25.0	12.5	30.0	34.0	36.6	0.7	S.W.	5.4	49	3.9	2.8	0.870	3.2	545	30
Liverpool Observatory.....	29.567	43.2	55.9	32.3	7.3	20.0	23.6	38.7	0.9	S.S.E.	6.9	43	7.5	3.0	0.862	3.5	545	37
Manchester.....	29.596	41.1	58.0	26.5	10.8	28.7	31.5	36.7	..	S.W.	7.1	50	8.0	2.8	0.855	3.3	545	144
Wakefield Prison.....	29.576	40.9	58.0	22.0	13.8	34.2	36.0	36.8	2.2	W.S.W.	7.4	58	5.2	2.7	0.861	3.2	545	115
Stonyhurst Observatory.....	29.559	40.2	54.1	23.5	11.6	28.4	30.6	36.3	1.6	S.S.W.	7.7	57	13.3	2.8	0.874	3.2	540	381
York.....	29.588	40.2	55.0	24.0	11.3	27.0	31.0	36.1	..	W.S.W.	..	38	5.2	2.7	0.893	3.2	546	50
Whitehaven.....	29.500	41.8	54.0	30.5	7.5	20.7	23.5	38.8	2.5	S.W.	6.1	46	7.4	2.9	0.877	3.5	543	90
Durham.....	29.520	41.5	57.0	28.0	10.7	29.5	34.5	37.1	1.2	S.W.	..	54	4.6	2.8	0.840	3.3	544	340
Newcastle.....	29.611	41.4	58.5	22.0	13.0	27.0	30.5	36.7	..	S.W.	6.0	43	7.4	2.8	0.848	3.2	544	..
North Shields.....	29.598	40.3	57.0	29.0	7.6	24.7	28.0	37.5	2.8	S.W.	..	59	5.4	2.8	0.933	3.4	547	124
Dunino.....	..	39.4	53.0	27.0	10.8	24.3	26.0	36.4	2.1	S.W.	3.8	36	8.1	2.7	0.890	3.2	541	250



## REVENUE.

*Abstract of the Net Produce of the Revenue of Great Britain in the Years and Quarters ending 5th July, 1850 and 1851; showing the Increase or Decrease thereof.—(Continued from page 189.)*

Sources of Revenue.	Years ending 5th July.			
	1850.	1851.	Increase.	Decrease.
	£	£	£	£
Customs.....	18,740,194	18,715,072	....	25,122
Excise .....	13,097,336	13,219,609	122,273	....
Stamps .....	6,325,499	6,040,249	....	285,250
Taxes.....	4,351,530	4,322,681	....	28,849
Property Tax .....	5,459,843	5,353,425	....	106,418
Post Office.....	817,000	891,000	74,000	....
Crown Lands.....	160,000	150,000	....	10,000
Miscellaneous .....	209,744	162,333	....	47,411
Total Ordinary Revenue ....	49,161,146	48,854,369	196,273	503,050
Imprest and other Moneys .	682,807	655,396	....	27,411
Repayments of Advances....	570,797	694,246	123,449	....
Total Income.....	50,414,750	50,204,011	319,722	530,461
Deduct Increase .....				319,722
Decrease on the Year .....				210,739

Sources of Revenue.	Quarters ending 5th July.			
	1850.	1851.	Increase.	Decrease.
	£	£	£	£
Customs .....	4,333,708	4,318,218	....	15,490
Excise .....	3,325,225	3,419,810	94,585	....
Stamps .....	1,590,767	1,525,492	....	65,275
Taxes.....	2,073,281	2,045,231	....	28,050
Property Tax.....	1,026,833	976,881	....	49,954
Post Office.....	210,000	240,000	30,000	....
Crown Lands.....	40,000	30,000	....	10,000
Miscellaneous .....	81,474	91,241	9,767	....
Total Ordinary Revenue ....	12,681,290	12,646,873	134,352	168,769
Imprest and other Moneys	135,827	139,770	3,943	....
Repayments of Advances ....	188,289	123,409	....	64,880
Total Income.....	13,005,406	12,910,052	138,295	233,649
Deduct Increase .....				138,295
Decrease on the Quarter .....				95,354

*Consolidated Fund Operations.*—The total income brought to this account in the quarter ending 5th July, 1851, was 12,940,373*l*. The total charge upon it was 7,911,413*l*., leaving a surplus of 5,028,960*l*.

## CORN.

*Average Prices of Corn per Imperial Quarter in England and Wales, during each Week of the Second Quarter of 1851; together with the Average Prices for the whole Quarter.—(Continued from p. 190.)*

Returns received at the Corn Office, Board of Trade.			Wheat.		Barley.	Oats.	Rye.	Beans.	Peas.
			Weekly Average	Aggregate Average of Six Weeks' regulating Duty.	Weekly Average	Weekly Average	Weekly Average	Weekly Average	Weekly Average
Weeks ending, 1851.			s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
April	5	.....	38 4	37 5	23 10	17 0	23 11	25 11	24 8
	12	.....	39 0	37 9	24 2	17 8	24 7	26 4	25 6
	19	.....	39 5	38 3	24 5	17 5	24 7	26 10	25 9
	26	.....	38 8	38 7	24 4	17 10	24 2	26 9	25 5
May	3	.....	38 10	38 9	24 3	18 3	23 11	27 9	25 4
	10	.....	38 2	38 11	24 4	18 8	24 7	27 10	25 11
	17	.....	38 3	38 10	24 2	18 11	25 9	28 10	27 2
	24	.....	39 3	38 10	24 1	19 5	24 7	29 2	26 1
June	31	.....	39 6	38 10	24 1	20 0	26 9	29 7	27 5
	7	.....	39 11	38 10	24 4	20 8	23 5	30 11	26 10
	14	.....	40 7	39 0	24 6	20 1	26 1	30 10	28 6
	21	.....	42 4	39 4	24 4	21 4	28 0	30 5	27 6
	28	.....	43 4	40 0	25 2	22 3	28 11	32 1	29 2
Average for the Quarter .....			39 4	..	24 3	19 2	25 3	28 8	26 6

*Foreign and Colonial Wheat and Wheat-Flour imported in each of the Months ending 5th April, 5th May, and 5th June, 1851; the Quantities Entered for Home Consumption during the same Months; and the Quantities remaining in Warehouse at the close of them.—(Continued from p. 190.)*

[From the "London Gazette."]

## WHEAT.

Months ending.	Imported.			Quantities entered for Home Consumption.			In Bond at the Month's end.		
	Foreign.	Colonial.	Total.	Foreign.	Colonial.	Total.	Foreign.	Colonial.	Total.
1851.	qrs.	qrs.	qrs.	qrs.	qrs.	qrs.	qrs.	qrs.	qrs.
5th April	493,954	..	493,954	493,954	..	493,954	10,033	9	10,042
5th May	337,754	1	337,755	337,754	1	337,755	10,032	10	10,042
5th June	308,802	1	308,803	308,802	1	308,803	10,033	9	10,042

## WHEAT-FLOUR.

Months ending.	Imported.			Quantities entered for Home Consumption.			In Bond at the Month's end.		
	Foreign.	Colonial.	Total.	Foreign.	Colonial.	Total.	Foreign.	Colonial.	Total.
1851.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.
5th April	480,203	24	480,227	480,203	24	480,227	2,944	10	2,954
5th May	416,492	14	416,506	416,495	14	416,509	2,936	11	2,947
5th June	479,048	213	479,261	479,048	213	479,261	2,937	10	2,947



Fluctuations in the Stock and Share Market during the Months of May and June, 1851.—(Continued from p. 191.)

Stocks and Shares.	Amount of Share.		Amount Paid.		Price on the 1st of		Highest Price during the Months of		Lowest Price during the Months of	
	May.	June.	May.	June.	May.	June.	May.	June.	May.	June.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	96½ to 2 49s. to 52s. Pm.	96¼ ex d. 41s. to 44s. Pm.	98 53s.	97¼ ex d. 48s. Pm.	96½ 38s.	96¼ ex d. 41s. Pm.
Consols .....	...	...	...	...	...	...	...	...	...	...
Exchequer Bills .....	...	...	...	...	...	...	...	...	...	...
RAILWAYS—										
Brighton .....	Stock	Stock	100 0 0	100 0 0	98	97	98½	97¼	95	93¼
Caledonian .....	50 0 0	50 0 0	50 0 0	50 0 0	15½	13½	15½	14	12½	10¼
Eastern Counties .....	20 0 0	20 0 0	20 0 0	20 0 0	7½	7	8	7½	6½	6½
Great Northern .....	25 0 0	25 0 0	25 0 0	25 0 0	18½	18½	19½	18½	17½	17½
Great Western .....	100 0 0	100 0 0	100 0 0	100 0 0	89	88	89½	88½	78½	82½
London and North-Western .....	Stock	Stock	100 0 0	100 0 0	130¼	125½	130¼	126	119	120
Midland .....	Stock	Stock	100 0 0	100 0 0	64¼	56¼	65¼	56¼	52	45
North Staffordshire .....	20 0 0	20 0 0	17 10 0	17 10 0	11½	10	11½	10½	9½	8½
South-Eastern .....	33 2 4	33 2 4	33 2 4	33 2 4	28½	24½	28½	25½	22½	21½
South-Western .....	Stock	Stock	100 0 0	100 0 0	91	86½	91	87	81	80¼
York, Newcastle, & Berwick .....	Stock	Stock	25 0 0	25 0 0	22	21¼	22¼	21¼	19¼	18½
York and North Midland .....	50 0 0	50 0 0	50 0 0	50 0 0	27½	23½	27½	23½	21½	18½
—										
Boulogne and Amiens .....	20 0 0	20 0 0	20 0 0	20 0 0	9½	9½	10	10¼	8½	9
Northern of France .....	20 0 0	20 0 0	16 0 0	16 0 0	14½	15	15½	15½	14½	14½
East Indian .....	20 0 0	20 0 0	16 0 0	16 0 0	17½	18½	18½	18½	17½	18½

Average Price of Meat as sold in Smithfield Market in the Months ending April, May, and June, 1851.—(Continued from p. 191.)

[From Returns sent to the Board of Trade.]

Description.	April.		May.		June.		Description.	April.		May.		June.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Inferior Beasts .....	2 8	2 8	2 6	2 8	2 8	2 8	Inferior Sheep .....	3 4	3 4	3 4	3 4	3 4	3 4
2nd class .....	3 0	3 0	2 10	3 0	3 0	3 0	2nd Class .....	3 8	3 8	3 4	3 4	3 4	3 4
3rd class (Large Prime) .....	3 4	3 4	3 2	3 4	3 4	3 4	3rd do. ....	4 0	4 0	3 8	3 8	3 8	3 8
4th class (Scots) .....	3 6	3 6	3 6	3 8	3 8	3 8	4th do. (South Down) ...	4 4	4 4	3 10	3 8	3 10	3 10
							Lambs .....	5 6	5 6	5 4	5 4	5 4	5 4

N.B.—Price of Meat at the rate of 8 lbs. Avordupois to the stone, sinking the offal.

## CURRENCY.

## BANK OF ENGLAND.

*An Account, pursuant to the Act of the 7th and 8th Victoria, c. 32, for the Weeks ending on Saturday, the 12th April, the 10th May, and the 7th June, 1851.—(Continued from p. 192.)*

[From the "London Gazette."]

ISSUE DEPARTMENT.			
	Weeks ending		
	12th April, 1851.	10th May, 1851.	7th June, 1851.
	£	£	£
Notes issued .....	26,966,270	26,649,110	27,198,335
Government Debt .....	11,015,100	11,015,100	11,015,100
Other Securities .....	2,984,900	2,984,900	2,984,900
Gold Coin and Bullion .....	12,932,895	12,615,735	13,164,960
Silver Bullion .....	33,375	33,375	33,375
Total .....	26,966,270	26,649,110	27,198,335

BANKING DEPARTMENT.			
Proprietors' Capital .....	14,553,000	14,553,000	14,553,000
Rest .....	3,097,929	3,134,369	3,089,074
Public Deposits .....	4,723,323	5,154,596	7,488,615
Other Deposits .....	10,164,340	8,963,891	8,726,683
Seven Day and other Bills ....	1,093,249	1,127,863	1,073,309
Total .....	33,631,841	32,933,719	34,930,681
Government Securities, including } Dead Weight Annuities .... }	14,086,798	13,606,361	13,544,329
Other Securities .....	11,901,832	11,508,890	12,558,110
Notes .....	7,019,945	7,195,960	8,190,020
Gold and Silver Coin .....	623,266	622,507	638,222
Total .....	33,631,841	32,933,719	34,930,681

## COUNTRY BANKS.

*Average Aggregate Amount of Promissory Notes of Country Banks, which have been in Circulation in the United Kingdom, distinguishing the several Banks, or Classes of Banks, by which issued in each part of the Kingdom, during the months ending 19th April, 17th May, and 14th June, 1851.—(Continued from p. 192.)*

Banks.	19th April, 1851.	17th May, 1851.	14th June, 1851.
England—Private Banks .....	3,591,285	3,692,680	3,514,286
Joint Stock Banks .....	2,880,893	2,958,161	2,805,311
Scotland—Chartered, Private, and } Joint Stock Banks .....	3,082,416	3,254,470	3,474,181
Ireland—Bank of Ireland, Private and } Joint Stock Banks .....	4,564,377	4,528,973	4,268,918
Total .....	14,118,971	14,434,184	14,062,696



# QUARTERLY JOURNAL

OF THE

## STATISTICAL SOCIETY OF LONDON.

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DECEMBER, 1851.

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*On the Duration of Life among the Clergy.* By WILLIAM A. GUY, M.B., Cantab. *Fellow of the Royal College of Physicians; Professor of Forensic Medicine, King's College; Physician to King's College Hospital; Honorary Secretary to the Statistical Society.*

[Read before the Statistical Society of London, November 17th, 1851.]

AN Essay by the present writer, "On the Duration of Life in the Members of the Several Professions," was read before the Statistical Section of the British Association for the Advancement of Science, on the 11th of September, 1846, and published in the ninth volume of the *Journal of the Statistical Society*. That Essay, which was based chiefly, but not exclusively, on facts gleaned from the Annual Register, contrasted the mean age at death of members of the three learned professions, of the Army and Navy, of men devoted to literature and science, to the fine arts, and to trade and commerce, and compared it with certain standards previously established. In the case of some of these professions and occupations, the averages obtained from the Annual Register were viewed in connection with numerical results derived from other sources.

The Essay now referred to was intended to form the introduction to a series of communications in which the duration of life of each profession should be examined by itself, with the aid of new facts drawn from sources other than the Annual Register. The present Essay is the first submitted to the Society in fulfilment of that intention. The facts which form the staple of it are derived from four sources:—

1. The County Histories of Northampton, Cheshire, Berkshire, and Surrey, and the History of Leeds, which histories have already supplied materials for an Essay on the Duration of Life among the English Gentry, also published in the ninth volume of the Journal of this Society.
2. The Annual Register, which, as has just been stated, supplied the facts for the Essay first referred to.
3. Chalmers' Biographical Dictionary, which, having been published between the years

1812 and 1817, affords the requisite data for determining the mean duration of life of professional men up to a comparatively recent period. And 4. That portion of the obituaries of the *Gentleman's Magazine*, from 1834 to 1839 inclusive, which is headed "Clergy deceased."

A few words of explanation will be required in respect of each of these classes of facts.

The ages at death obtained from the County Histories and from the History of Leeds were copied originally from mural tablets, and are those of the clergymen of the places described in the histories, of whom the greater number have been in no way distinguished from other members of their profession. The results may therefore be presumed to represent very fairly the mean duration of life of the clergy of town and country during two or three centuries.

The ages at death extracted from the Annual Register are those of clergymen sufficiently distinguished by scientific or literary attainments, or otherwise sufficiently well known to command a place in the obituary which forms a part of that publication. The short biographical sketches from which the ages at death are taken are brought down to within a very few years of the present time, and the mean duration of life is, therefore, that of clergymen dying in the latter half of the last and the first half of the present century. One peculiarity may be expected to exist in the facts obtained from this source. They will naturally comprise, in the case of the clergy, as of other professions, instances of great longevity, introduced as items of interesting intelligence.

The ages at death obtained from the Biographical Dictionary are those of a higher order of clergymen, who have achieved a distinguished place in literature and science, including a considerable proportion of the successive occupants of the episcopal bench, with some dissenting clergymen, and a few Roman Catholic priests. As the Biography is very comprehensive, the ages at death are those of clergymen who have lived at very different periods of time, from the date of the earliest trustworthy records down to the early part of the present century. As mere longevity would not give any claim to a place in this Biographical Dictionary, the results may be expected to differ in this respect from those drawn from the facts recorded in the Annual Register.

The results obtained from the obituaries of the *Gentleman's Magazine* may be expected to represent with great fidelity the duration of life of the clergy of the Church of England in town and country, inasmuch as no system of exclusion appears to be practised, but all known deaths are recorded indiscriminately. In order to facilitate calculation, I have taken the first thousand deaths occurring between the years 1834 and 1839 inclusive, omitting all clergymen not belonging to the Established Church. I am indebted to Mr. Neison for a life-table founded upon these facts (see Table V.).

By means of the facts derived from these three sources, I have constructed a series of four tables, the counterparts of tables contained in former contributions. Of these tables, the first exhibits the number of deaths recorded during each year of life; the second, the number and per-centage proportion at each quinquennial period; the third, the number and per-centage proportion at each decennial period; while



the fourth table shows the mean age at death of all who died after completing their 25th, 30th, 40th, and 50th years respectively.

Of these four tables, the last is the most valuable for purposes of comparison. I shall accordingly make it the subject of the few observations which I have to offer on the duration of life among the clergy, considered by itself, and without reference to the relative duration of life among other classes of persons.

TABLE I.

Number of Deaths.				Age.	Number of Deaths.			
County Histories.	Annual Register.	Biographical Dictionary.	Gentleman's Magazine.		County Histories.	Annual Register.	Biographical Dictionary.	Gentleman's Magazine.
....	2	....	11	65....	14	17	24	20
4	3	....	10	66....	19	27	28	20
1	4	4	12	67....	20	17	21	31
2	3	1	7	68....	19	30	26	28
1	4	2	10	69....	12	12	22	11
....	5	3	11	70....	16	21	26	51
2	5	1	12	71....	11	23	24	30
5	9	1	11	72....	11	28	36	29
2	6	2	6	73....	18	38	35	23
4	4	3	10	74....	12	29	32	28
3	3	2	14	75....	14	37	20	40
2	4	1	9	76....	17	29	25	37
1	12	7	8	77....	12	35	22	28
4	3	3	3	78....	14	31	21	28
6	10	12	13	79....	6	17	27	8
4	....	5	8	80....	13	47	17	36
7	16	5	7	81....	10	22	19	15
8	7	7	9	82....	10	33	19	24
10	6	4	6	83....	7	28	17	16
7	8	6	10	84....	5	22	17	19
7	4	7	5	85....	2	24	11	19
3	6	10	10	86....	1	12	11	12
10	4	7	9	87....	4	10	8	9
11	8	9	9	88....	6	20	13	12
8	10	10	8	89....	2	6	4	2
1	6	2	4	90....	7	12	5	9
2	8	15	11	91....	1	4	1	3
12	9	16	11	92....	1	7	4	4
10	8	16	11	93....	....	5	....	....
18	9	22	11	94....	....	5	2	4
12	8	22	15	95....	2	5	5	3
12	7	15	13	96....	....	....	....	....
19	13	17	12	97....	....	1	....	....
12	6	14	6	98....	1	....	1	....
13	19	16	21	99....	1	....	....	....
11	12	23	8	100 & upwds. }	....	6*	1†	....
9	17	26	8					
23	20	27	27					
18	13	22	15	Max.	99	108	100	....

\* Two of 100, one of 103, one of 105, one of 106, and one of 108.

† One of 100.

TABLE II.

Age.	County Histories.	Annual Register.	Biographical Dictionary.	Gentleman's Magazine.	Per-Centage Proportions.			
					County Histories.	Annual Register.	Biographical Dictionary.	Gentleman's Magazine.
26—30	8	16	7	50	1.39	1.66	0.77	5.00
31—35	13	29	10	50	2.27	3.02	1.10	5.00
36—40	16	32	25	47	2.80	3.33	2.75	4.70
41—45	36	37	27	40	6.29	3.85	2.97	4.00
46—50	39	32	43	41	6.82	3.33	4.73	4.10
51—55	43	40	71	48	7.53	4.16	7.81	4.80
56—60	68	53	84	67	11.88	5.52	9.24	6.70
61—65	75	79	122	78	13.11	8.22	13.42	7.80
66—70	86	107	123	141	15.03	11.13	13.53	14.10
71—75	66	155	147	150	11.54	16.13	16.17	15.00
76—80	62	159	112	137	10.84	16.54	12.32	13.70
81—85	34	129	83	93	5.94	13.42	9.13	9.30
86—90	20	60	41	44	3.50	6.24	4.51	4.40
91—95	4	26	12	14	0.70	2.71	1.32	1.40
96—100 & upwds.	2	7	2	....	0.35	0.78	0.22	....

TABLE III.

Age.	County Histories.	Annual Register.	Biographical Dictionary.	Gentleman's Magazine.	Per-Centage Proportions.			
					County Histories.	Annual Register.	Biographical Dictionary.	Gentleman's Magazine.
26—30	8	16	7	50	1.39	1.66	0.77	5.00
31—40	29	61	35	97	5.07	6.35	3.85	9.70
41—50	75	69	70	81	13.11	7.18	7.70	8.10
51—60	112	93	155	115	19.41	9.68	17.05	11.50
61—70	161	186	245	219	28.14	19.35	26.95	21.90
71—80	128	314	259	287	22.38	32.67	28.49	28.70
81—90	54	189	124	137	9.44	19.66	13.64	13.70
91—100 & upwds.	6	33	14	14	1.05	3.44	1.54	1.40

TABLE IV.

Age.	County Histories.	Annual Register.	Biographical Dictionary.	Gentleman's Magazine.
26 and upwards	63.54	68.81	66.13	64.14
31 „	64.04	69.49	66.42	66.05
41 „	65.55	71.82	67.60	69.44
51 „	68.74	74.04	69.48	71.94



TABLE V.

*Expectation of Life of the Clergy, 1834—1839.*

Age.	Expectation.	Age.	Expectation.	Age.	Expectation.
25.....	39·2953	50.....	21·7624	74.....	6·9522
26.....	38·4953	51.....	21·3584	75.....	6·5608
27.....	37·7567	52.....	20·2065	76.....	6·2014
28.....	37·0662	53.....	19·4600	77.....	5·8690
29.....	36·4112	54.....	18·7215	78.....	5·5374
30.....	35·7800	55.....	17·9920	79.....	5·2189
31.....	35·1579	56.....	17·3119	80.....	4·9024
32.....	34·5320	57.....	16·5643	81.....	4·6170
33.....	33·9010	58.....	15·8288	82.....	4·3287
34.....	33·2632	59.....	15·1702	83.....	4·2144
35.....	32·6190	60.....	14·4806	84.....	3·7721
36.....	31·9673	61.....	13·7938	85.....	3·5004
37.....	31·3787	62.....	13·1147	86.....	3·2306
38.....	30·6398	63.....	12·4505	87.....	2·9590
39.....	29·9636	64.....	11·7814	88.....	2·6853
40.....	29·2777	65.....	11·1920	89.....	2·4100
41.....	28·5152	66.....	10·6132	90.....	2·1347
42.....	27·8700	67.....	10·0482	91.....	1·8641
43.....	27·1483	68.....	9·5589	92.....	1·6111
44.....	26·3575	69.....	9·0759	93.....	1·3666
45.....	25·6767	70.....	8·6167	94.....	1·1250
46.....	24·9304	71.....	8·1786	95.....	·8888
47.....	24·1810	72.....	7·7545	96.....	·6666
48.....	23·1748	73.....	7·3456	97.....	·5000
49.....	22·4700				

As I have already stated, the last column of this table, which exhibits the duration of life as deduced from the obituaries of the *Gentleman's Magazine*, is that which most truly represents the average age attained by the clergy of the Established Church in town and country. The third column, based on the facts extracted from Chalmers' *Biographical Dictionary*, must be looked upon as representing the duration of life of such clergymen of different denominations as have attained to a certain degree of eminence in literature and science, and not as displaying the true value of life among the clergy, considered simply as clergy. The same remark applies, though not in the same degree, to the second column, comprising the averages deduced from the facts drawn from the *Annual Register*, in which record the obituaries partake somewhat of the character of short biographical memoirs of persons of distinction or notoriety, at the same time that they comprise several instances of longevity not to be found in the *County Histories*, the *Biographical Dictionary*, or the *Gentleman's Magazine*. Hence a paucity of deaths at early periods of life, and an excess of deaths at more advanced ages, and averages exceeding those of all the other columns. The mean ages given in the first column, as deduced from the facts supplied by the *County Histories*, are, it will be seen, lower than those displayed in the other columns. The difference between the several averages and those deduced from the facts drawn from the *Gentleman's Magazine*, amounts to from half a year to nearly four years. The disparity increases as the younger lives are excluded, and

is evidently dependent on the greater longevity of the clergy whose deaths are entered in the more modern record. The circumstance which offers the most probable explanation of this disparity, is the much earlier date of the County Histories. Of the deaths recorded in their pages, comparatively few occurred during the present century, and the majority much earlier, while all the deaths extracted from the Gentleman's Magazine occurred between the years 1834 and 1839. The Annual Register, which is also a more modern record, has supplied facts which yield higher averages than the County Histories. The averages deduced from the facts drawn from the Biographical Dictionary, on the contrary, resemble those based on the facts contained in the County Histories, in extending over a considerable period of time; and with this point of resemblance, the mean duration of life, approximating somewhat closely for the more advanced ages, certainly coincides. As there is the very best reason to believe\* that an improvement has taken place in the duration of life of the upper and middle classes of society which would make itself sensibly felt in a comparison between an obituary embracing two or three centuries and one restricted to a few years of the present century, it is highly probable that the increased value of life shown in the last column (Gentleman's Magazine) is traceable chiefly to this cause.

Reverting to the opinion already expressed, that the averages for which the obituaries of the Gentleman's Magazine have supplied the materials represent most faithfully the duration of life of the clergy of the Established Church, considered simply as clergy, I have now to add, in respect of these averages, that they evidently do not admit of strict comparison with any other order of facts, whether contained in the table just referred to, or in any of my previous essays. I must, therefore, reserve these figures for future use, when I come to treat of the duration of life among the members of other professions. The only other use to which it has occurred to me to put the facts derived from this source, is the determination of the influence of town and country life respectively on the members of the same profession. Out of the 1000 deaths occurring between the years 1834 and 1839, eighty were those of clergymen whose lives were spent in cities or large towns. The average age at death of these eighty clergymen I have compared with the average age attained by other eighty clergymen, whose lives were passed in the rural districts. These latter were taken in the order in which they stood in the tables.

The following is the result of the comparison:—

TABLE VI.

Clergy of Towns and Cities.....	63·74
Clergy of Rural Districts.....	65·85
Difference.....	2·11

This difference of little more than two years in favour of clergymen resident in the country, is founded upon too small a number of facts to be regarded in any other light than as a probability, to be confirmed or weakened by further comparisons to be hereafter instituted.

Before dismissing the facts obtained from the Gentleman's Magazine, I must direct attention to Table V., which shows the expectation

\* See table at p. 42, vol. ix., of the *Journal of the Statistical Society*.



of life for the clergy, and compare the figures in that table with the expectation of life prevailing among other classes. This comparison is made for four periods of life in the following table:—

TABLE VII.

Age.	Clergy. (Gentleman's Magazine.)	Gentry. (County Histories.)	Aristocracy.	Agricultural Labourers' Friendly Societies. (Mr. Neison.)	Liverpool Friendly Societies. (Mr. Neison.)	England. (Males.) (Mr. Neison.)
30 ....	35.8	31.2	30.9	40.6	30.1	34.1
40 ....	29.3	24.9	24.4	32.8	23.1	27.5
50 ....	21.8	18.4	17.9	25.1	17.1	20.8
60 ....	14.5	12.8	12.6	17.8	12.0	14.6

The result of this comparison is very favourable to the clergy. Their expectation of life at 30 years of age exceeds that of the English gentry by more than  $4\frac{1}{2}$  years, and that of the aristocracy by nearly 5 years. It also exceeds the expectation for all England by about  $1\frac{3}{4}$  years, but falls short of the expectation for agricultural labourers, being members of benefit societies, by nearly 5 years. The comparison between the clergy and the English gentry and aristocracy is, however, open to the objection, that the expectation of life in the case of the clergy is calculated upon deaths of very recent occurrence, while, in the case of the gentry and aristocracy, it is deduced from the deaths which have occurred during several centuries. The other comparisons between the clergy and the male population of England, and between the clergy and the agricultural labourers, being members of benefit societies, are free from that objection, inasmuch as the expectations of all these classes are calculated from deaths of recent occurrence.

Having made all the use of the facts gleaned from the Gentleman's Magazine of which they are at present susceptible, I proceed to make a few observations on the other new series of facts contained in the tables, namely, that taken from Chalmers' Biographical Dictionary.

In a former communication to the Society,\* I presented a tabular comparison of the mean duration of life attained by different classes of society in successive half-centuries. From that table, it appeared that the value of life in England had been diminished in persons born during the last half of the 17th century, when compared with the half century preceding and following it; and, indeed, that there had been a progressive fall in the duration of life from the beginning of the 16th to the end of the 17th century, with a very marked reaction in persons born during the first half of the 18th century. Now, the facts extracted from the Biographical Dictionary have furnished me with the means of still farther testing this question, and I have accordingly prepared a table, in which the average duration of life, with the number of facts from which it is deduced, is compared with the averages of the table just referred to†:—

\* *Journal of the Statistical Society*, vol. ix. p. 42.

† It will be seen that, for the purposes of comparison, the half centuries, as given in the table, vol. ix. p. 42, are combined into centuries.

TABLE VIII.

	Biographical Dictionary.		Table at p. 42, vol. ix. of the Journal of the Statistical Society.	
	No. of Deaths.	Mean Age.	No. of Deaths.	Mean Age.
7th Century.....	1	63	....	....
8th    "   .....	....	....	....	....
9th    "   .....	....	....	....	....
10th   "   .....	....	....	....	....
11th   "   .....	3	73·33	....	....
12th   "   .....	4	72·25	....	....
13th   "   .....	1	52·00	17	63·18
14th   "   .....	5	67·40	21	46·42
15th   "   .....	18	68·78	53	58·24
16th   "   .....	258	66·86	802	65·13
17th   "   .....	426	66·41	3,248	58·57
18th   "   .....	193	66·78	1,942	63·75

If we confine our attention to the last three lines of this table, in which alone the mean results are based on a sufficient number of facts to inspire confidence, we shall observe that, though the average duration of life among the clergy in the last three centuries has fluctuated very slightly, it has followed the same rule as the larger number of facts, presenting a maximum in the 16th and a minimum in the 17th century. But as the difference between the greatest and least average is less than half a year, and the number of facts not very considerable, it is obviously quite possible that this correspondence between the two tables may be merely a coincidence.\*

Another question which the tabular abstracts from the Biographical Dictionary afforded me the means of discussing, though the data are very far from being sufficiently numerous, is the relative duration of life of married and single clergymen. It happened that out of the whole number of clerical biographies, there were 370 in which the clergymen are stated to have been married, and 31 in which they are stated to have led a single life. The mean results are embodied in the following table:—

TABLE IX.

	No. of Deaths.	Mean Age.	Greatest Age.
Married .....	370	68·65	100
Single .....	31	63·13	84
Difference....	....	5·52	16

\* It is stated in the text that the latest period to which Chalmers' Biographical Dictionary is brought down is the year 1817. Having extracted from the Annual Register the ages at death of several clergymen belonging to the same class as those whose lives are there recorded, I was curious to see whether they attained to a greater average age. The mean age of clergymen born in the 18th century is shown by the table to be 66·78, while the average age of 60 clergymen who died subsequently to the year 1817, and who were born towards the end of the 18th century, is no less than 70·30. This comparison affords a presumption in favour of a recent improvement in the duration of life among the clergy.



An average excess of  $5\frac{1}{2}$  years in favour of the married clergy, and a difference between the maxima of 16 years, is probably too large to be attributable wholly to the insufficient number of facts. This table, therefore, may be also placed on record as establishing a probability, to be strengthened or weakened by the results of future inquiries.

In the tabular abstracts taken from Chalmers' Biographical Dictionary, it happens that the archbishops and bishops of the Established Church are distinguished from the body of the clergy. I am therefore in a condition to show the average and greatest ages attained by them; and as I have also extracted from the *Art de Vérifier les Dates* the ages at death of 42 popes and of 22 Romish saints, and from Alban Butler's *Lives of the Saints* the larger number of 141 deaths, I have appended a table in which these several averages are contrasted:—

TABLE X.

	No. of Deaths.	Average Age.	Greatest Age.
Popes .....	42	72·33	100
Archbishops .....	35	71·37	90
Bishops .....	145	71·23	100
Saints of Romish Calendar (Butler's Lives).....	141	69·25	120
Saints of Romish Calendar (Art de Vérifier les Dates)	22	69·09	100

The averages in this table are such as might have been expected. The popes, who, for the most part, have been elected at very advanced ages, survive by about one year the archbishops of the Established Church, who are appointed at a somewhat earlier period of life. The bishops of the Established Church come next in order, differing, however, very little from the archbishops. The saints of the Romish calendar attain a lower average age by about 3 years than the popes, and by about 2 years than the dignitaries of the Church of England. As, however, the saints of the Romish calendar are a very mixed class, comprising several of the popes, some few kings, many heads of the monastic orders, and a certain proportion of ascetics, I do not attach any importance to the comparison now made, but allow the results to stand in the table as possessing a certain amount of interest.

The interest attaching to this communication would have been greatly increased by a comparison of the average duration of life among the clergy with the duration of life among the members of other professions; but this comparison must necessarily be postponed till I come to treat of the duration of life among the members of the remaining professions.

*Vital Statistics of Geneva:—an abridged translation from the French of M. Edouard Mallet.* By RICHARD VALPY, Esq.

THE memoir by M. Edouard Mallet, entitled "Historical and Statistical Inquiries respecting the Population of Geneva, from 1549 to 1833," appeared in the seventeenth volume of the "Annales d'Hygiène Publique," and the following abstract has been prepared, as the facts and results detailed by M. Mallet are not merely of local interest.

The city of Geneva stands in  $46^{\circ} 12'$  north latitude, and in  $3^{\circ} 49'$  longitude east of Paris, at an elevation of 1230 feet above the level of the sea. The mean temperature is  $50.13$  Fahrenheit; the mean height of the barometer  $28 \frac{6.6}{100}$ ; the diurnal variation of barometer  $\frac{1}{33}$  inches; the mean of the hygrometer  $81^{\circ} 85'$ ; and the quantity of rain or snow  $30 \frac{4.3}{100}$  inches. Northerly winds prevail, on an average, for 175 days, southerly for 128, and calms for 62 days, during the year.

In 1837 Geneva contained 1250 houses, or 1 house for every 21.7 inhabitants.

The progress of the population from 1543 to 1834, is exhibited by the following figures:

	Increase per Cent.		Increase per Cent.		Increase per Cent.
1543....13,000	—	1721....20,781	60	1805....22,300	71
1589....13,000	—	1755....21,816	68	1812....24,158	86
1693....16,111	24	1781....24,810	91	1822....24,886	91
1698....16,934	30	1785....25,500	96	1828....26,121	1.01
1711....18,500	42	1789....26,140	1.01	1834....27,177	1.09

It will be observed that the population steadily increased until the year 1789, when it numbered 26,140 souls. This number was reduced to 22,300 between 1789 and 1805; and, until the year 1828, the population did not again equal the number it had reached in 1789. To the French Revolution and its consequences may be attributed this retrocession, which interrupted, for nearly 40 years, the progressive increase of the population.

The average annual population, during the period of M. Mallet's own observations, from 1814 to 1833, may be estimated at 25,600, and this number is the basis of his calculations.

At Geneva, deaths were registered as early as 1549, and marriages and baptisms in 1550; but M. Mallet has not brought forward any figures relating to marriages, baptisms, or births, for an earlier period than 1695.

In this abstract, the subjects of M. Mallet's inquiries have been arranged in the order of marriages, births, deaths, vitality, and influence of the seasons.

The following table shows the average annual number of marriages, and their relative proportions to the population and births for periods of 20 years, from 1695 to 1791, and for the 7 years from 1805 to 1812.\*

\* On the union of Geneva with France, the celebration of marriage became merely a civil contract, according to the law of September 20, 1792. By a law in 1816, a marriage, the preparatory deed of which had been prepared by the civil



Periods.	Average Annual Number.	Proportion to Population.	Proportion to Legitimate Births.
1695 to 1710....	132	1 to 134	1 to 4·88
1711 „ 1730....	171	„ 117	„ 3·90
1731 „ 1750....	186	„ 115	„ 3·63
1751 „ 1770....	213	} „ 114	„ 3·62
1771 „ 1791....	211		
1805 „ 1812....	144	„ 161	„ 3·34

In the earlier periods, the marriages increased in number, but decreased in fecundity. The population, notwithstanding, continued to increase, which proves that the numerical and social progress of a population depends less upon the number of children born, than upon the number reared, and who reach an age of usefulness to themselves and others.

The number of marriages in subsequent years, from 1814 to 1833, is next given, together with the number of divorces.

Years.	Marriages.	Divorces.		
		Specified Causes.	Mutual Consent.	Total.
1814.....	121	0	2	2
1815.....	151	3	1	4
1816.....	212	6	0	6
1817.....	166	5	3	8
1818.....	175	2	4	6
1819.....	149	4	1	5
1820.....	160	4	2	6
1821.....	177	5	0	5
1822.....	145	3	0	3
1823.....	182	1	1	2
	1,638	33	14	47
1824.....	199	2	0	2
1825.....	179	4	0	4
1826.....	169	1	2	3
1827.....	181	3	3	6
1828.....	210	3	2	5
1829.....	204	1	1	2
1830.....	192	2	0	2
1831.....	200	3	1	4
1832.....	245	4	0	4
1833.....	199	3	0	3
	1,978	26	9	35
Total....	3,616	59	23	82

officer, was not valid without the religious ceremony of the nuptial blessing. The law of 1816 was abrogated in 1831, when marriage again became only a civil contract, definitively concluded and confirmed before the civil officer, who merely reminds the parties of the duty which religion imposes upon them of consecrating their marriage by the nuptial blessing.

In the last 10 years the increase of the marriages was 20·75 per cent., or about  $\frac{1}{5}$ , whilst the population had increased  $\frac{1}{8}$ , and the divorces, during the same years, decreased 26 per cent. The average for the 20 years gives 1 marriage to 141 inhabitants, and to 2·71 births; but for the last 10 years, 1 to 129 inhabitants, and to 2·96 births.

M. Mallet observes that the proper comparison is not between the number of marriages and the total population, but between the number of marriages and that of individuals of a marriageable age in a given population; and this proportion varies with the longevity of the population, because the population which is endowed with the greatest longevity, possesses a nubile number proportionably greater than the population with a shorter period of life, which loses many individuals under the age of puberty. As the Genevese population enjoys a considerable longevity, we may conjecture that the proportionate number of its marriages is, in reality, less than it would appear from a mere inspection of the figures we have given.

To show an average of the relative domestic condition of the individuals who married from 1814 to 1833, the marriages contracted in the eight years 1814 and 1815, 1826 to 1830, and 1832, have been selected, and from them the following results are obtained. In the eight years the marriages were:—

	Marriages.	Proportions.
Between Bachelors and Spinsters.....	1,201	81·53
„ Bachelors and Widows .....	45	3·87
„ Bachelors and Divorced.....	12	
„ Divorced and Spinsters .....	5	12·36
„ Widowers and Spinsters .....	177	
„ Divorced and Widows .....	1	2·24
„ Widowers and Widows .....	31	
„ Widowers and Divorced.....	1	
	1,473	100·00

According to this classification, the following are the numbers of the first and second marriages of each sex:—

	First Marriages.	Second Marriages.
Males .....	1,258 (0·854)	215 (0·146)
Females .....	1,383 (0·939)	90 (0·061)

and, by taking the proportion between the first marriages and the total marriages, it will be seen that

100 males married for the first time in 117·1 marriages,  
and 100 females „ „ 106·5 „

Therefore first marriages were contracted by

Males, in proportion to females, as 100 to 109·9, and by  
Females, „ „ males 96·9 „ 100

consequently, in proportion to the total number of marriages, first marriages were more frequent amongst the females by about 10 per cent. But, were we to calculate the average annual proportions between the first marriages of each sex and the population of each sex,



the males would have an advantage over the females of  $6\frac{1}{2}$  per cent. as regards first marriages, thus:—

$$\frac{11,749 \text{ males}}{154 \text{ first marriages}} = 76, \text{ and } \frac{13,851 \text{ females}}{170 \text{ first marriages}} = 81.5$$

or 1 first marriage in 76 males, and 1 first marriage in 81 females.

The second marriages, defined by M. Mallet as the "*palingamique*," force, exhibit a still greater excess on the part of the males, by whom they were contracted more than twice as often as they were by the females. In proportion to the total marriages, the second marriages of the males occurred as 1 in 6.85, and of the females as 1 in 16.36. The real numbers were 215 and 90, which bear to each other the proportions of 1 to 0.418 and 1 to 2.388. The superior "*palingamique*" force possessed by the male will appear somewhat remarkable when it is remembered that more wives survive their husbands than husbands their wives, a consequence of men marrying at a later age, and being endowed with a lower degree of longevity. Were these two counter-acting causes not in operation, the "*palingamique*" force of the male would be still more powerful. M. Mallet calculates the female's chance of surviving her husband to be  $\frac{1}{10}$  at the time of marriage.

In order to ascertain the average age of each sex at the time of marriage, calculations have been made on the numbers and ages of the persons married during the five years from 1826 to 1830,† as peace and prosperity then prevailed, and the population would, therefore, be in its usual and normal state. For that period we have these figures:—

	Aggregate Ages.			Average Ages at Marriage.	
	Years.	Months.		Years.	Months.
833 males .....	24,184	8	.....	29	0
902 females .....	24,270	8	.....	26	10
Superior average age of the males .....				2	2

As, at the age of 29, men have a probable life of 32.46 years, and women of 35.65 years at the age of 27, consequently, at the time of marriage, the probable life of women is longer by 3.19 years than that of their husbands, and this difference is as 11 to 19 in favour of females being the survivors.

The registers examined by M. Mallet exhibited all possible extremes and differences of real ages at the time of marriage:—For example, first marriages occurred between men of 65 and women of 60; widowers of 80 and upwards, and widows of 70, had not been deterred from entering again the matrimonial state; while, on the other hand, bachelors and spinsters were married at the legal ages of 18 and 15 respectively; but, during the twenty years from 1814 to 1833, these ages had not been anticipated by any dispensation.

\* From *παλιν*, again, and *γάμος*, marriage.

	Average Age of Males.			Average Age of Females.	
	Years.	Months.		Years.	Months.
† 1826.....	29	4	.....	26	10
1827.....	29	4	.....	26	9
1828.....	28	10	.....	27	0
1829.....	29	5	.....	26	10
1830.....	28	4	.....	27	0

In the next table are given the ages of the males and females, at the first as well as subsequent marriages, during the years 1826-30.

Ages.	Males.		Females.	
	Actual Numbers.	Proportions.	Actual Numbers.	Proportions.
Under 20 Years .....	8	0·8	81	8·5
From 20 to 30 Years .....	554	58·0	591	61·8
„ 30 „ 40 „ .....	257	26·9	215	22·5
„ 40 „ 50 „ .....	77	8·0	54	5·6
„ 50 „ 60 „ .....	43	4·5	14	1·5
„ 60 „ 70 „ .....	13	1·4	1	0·1
„ 70 „ 80 „ .....	4	0·4	0	·0
Total.....	956	100·0	956	100·0

The following table exhibits the comparative ages of the persons married, and as the relative ages of husbands and wives appear to exert a considerable influence on the fecundity of marriages, the comparison is important and deserves attention.

Sex.	Difference of Age.	No. of Marriages.	Proportion.
Males older than Females, 656.	By 20 Years .....	28	2·93
	„ 15 to 20 Years .....	37	3·87
	„ 10 „ 15 „ .....	94	9·83
	„ 5 „ 10 „ .....	177	18·52
	„ 1 „ 5 „ .....	256	26·78
	„ 1 Month to 1 Year.....	64	6·69
Both of equal age .....		10	1·04
Females older than Males, 290.	By 1 Month to 1 Year .....	67	7·01
	„ 1 to 5 Years .....	130	13·60
	„ 5 „ 10 „ .....	69	7·22
	„ above 10 Years.....	24	2·51
Total.....		956	100·00

By this table it will be seen that in thirty marriages per cent. the wife was older than the husband, which is a result unexpected and little in conformity with the notions which are generally entertained. And as the average marriage-age of the husband is only superior to that of the wife by 2 years and 2 months, it may be concluded that, at Geneva, the average marriage-age of the women is late when compared with that of the men. But this circumstance may be partly explained by the predominance of females in the population, and partly by there being in the town a great number of female servants who do not marry until they have accumulated sufficient means to settle in life.

With regard to the difference of age between husbands and wives, it is well known that when too great a difference exists the marriages are not very productive; and we may presume that this cause would exert an influence where the husband is more than 10 years older than



the wife (which was 16·73 per cent. in the last table), and especially when the wife is more than 5 years older than the husband (which was 9·73 per cent.): these two examples made 26·36 per cent., or  $\frac{1}{4}$  of the marriages in five years. A large proportion of the marriages contracted at such ages would be barren, or at least very unproductive.

Before the age of 25 for men and 21 for women, marriages can only take place with the consent of the parents. From 1826 to 1830, 199 males (one of whom was a widower) were married under 25 years, which is 20·8 per cent.; and 135 females under 21 years, which is 14·1 per cent.

Children born before marriage were made legitimate in the instances of 60 marriages, during the seven years 1814 and 1815, and 1826 to 1830, which is 4·88 per cent. or nearly  $\frac{1}{20}$ .

The relative proportions between the marriages and births from 1814 to 1833 have been already shown, at page 300, to be 1 to 2·71, or nearly  $2\frac{3}{4}$  children to each marriage. If 517 still-born legitimate children are added, the proportion will be

2·7193 born alive.

0·1429 still-born.

---

2·8622 conceptions to each marriage.

This mode of calculating the proportion by the total number of marriages and the total number of births may be questioned, as the registers do not distinguish the marriages which have proved barren; and the births in a town do not exactly correspond with the marriages in the same town. In Geneva, children are born of parents who were married elsewhere, and persons who are married there settle in other parts. Besides, the births which are registered in one year do not correspond with the marriages celebrated in the same year, therefore the births which took place in 1814, when the offspring of the marriages of the previous year, and the births consequent on the marriages in 1833, will not appear before the following year.

These objections could not be overlooked in considering the fecundity of a population for one or two years only, but in doing so for a period of 20 years their force disappears. As the fruitfulness of the marriages of 1814-15-16 has probably ceased before 1833, and if the children who spring from the marriages of 1833 are excluded, their number will be nearly balanced by that of the children included from the marriages of 1813.

In the last 10 years of the seventeenth century one marriage produced 5 children; the probable life was scarcely 20, and Geneva contained barely 17,000 inhabitants. Towards the end of the eighteenth century there were but 3 children to a marriage; the probable life exceeded 32 years, and the population was 26,000. At the present time  $2\frac{3}{4}$  children are the offspring of a marriage, the probable life is 45 years, and the population exceeds 27,000.

Marriages dissolved by mutual consent during the 20 years from 1814 to 1833, have lasted on an average from the day of celebration to that of the divorce granted by the civil officer (including the year for the necessary proceedings), 12 years, 2 months.

The average duration of marriages dissolved for specified causes (including the time of proceedings in pleading and defending), has been 13 years. Extreme cases, 1 at the end of 2 years 9 months, another at the expiration of 31 years 8 months.

When Geneva was subject to the laws of France, and divorces were easily to be obtained, their number was great. From the end of the year 1790 to the end of the year 1802, there were 796 marriages and 102 divorces, or 1 in 7·8. But since the facilities of gaining divorces have been restricted, a great alteration has occurred, as from the year 1803 to the end of 1833 there were 5,246 marriages and 109 divorces, or 1 in 48, which is six times less frequent than they were during the sad influence of the law of the 25th September, 1792.

The following particulars respecting celibacy refer entirely to females. The 5,690 female deaths, from 1814 to 1833, are divided thus:—

Spinsters .....	2,584	.....	45·41
Wives.....	1,489	.....	26·17
Widows and Divorced .....	1,617	.....	28·42
	<hr/>		<hr/>
	5,690		100·00

1,491 died before the legal marriage-age, or 15 years ( $\frac{1}{4}$ )	26·20	
Of the remaining marriageable 4,199—3,106 marry ( $\frac{11}{20}$ )	54·59	
Which is, on the number of marriageable.....	....	73·97
And 1,093 remain spinsters ( $\frac{1}{5}$ ).....	19·21	
Which is, on the number of marriageable.....	....	26·03
	<hr/>	<hr/>
	100·00	100·00

Spinsters.		Years.	Per Cent.
Of these 1,093 .....	160 die between	15 and 20 .....	14·64
" .....	155 "	20 " 25 .....	14·18
" .....	102 "	25 " 30 .....	9·33
" .....	120 "	30 " 40 .....	10·98
" .....	98 "	40 " 50 .....	8·97
" .....	458 "	above 50 .....	41·90
			<hr/>
			100·00

In the Pays de Vaud, during the eighteenth century, it appears that of 4,714 females who arrived at 15 years of age, 3,615 married (0·7669); 350 died between 15 and 30 (0·0743); and 749 died above 30 (0·1588).

The question as to whether the married female lives longer than the unmarried has not been considered. But Muret says that the former at 20 has an average life of 2 years beyond that of the latter; and D'Odier gives the married female at that age a superiority of 9 or 10 years. However this may be, it should not be forgotten that the class of young married women is, as Muret observes, composed of picked individuals.

We now come to the subject of Births, and the next table exhibits their number, in decennial periods, from 1695 to 1791.



Periods.	Males.	Females.	Total.
1695 to 1700.....	1,909	1,839	3,748
1701 „ 1710.....	3,391	3,209	6,600
1711 „ 1720.....	3,374	3,177	6,551
1721 „ 1730.....	3,538	3,268	6,806
1731 „ 1740.....	3,513	3,348	6,861
1741 „ 1750.....	3,405	3,275	6,680
1751 „ 1760.....	3,847	3,727	7,574
1761 „ 1770.....	3,957	4,098	8,055
1771 „ 1780.....	4,020	3,873	7,893
1781 „ 1791.....	4,068	3,928	7,996
Total .....	35,022	33,742	68,764

The male births were 50·93 per cent. of the total number, and in proportion to the female births, were as 100 to 103·8; the female births were 49·07 per cent. of the total number, and, in proportion to the male births, were as 96·3 to 100. As, in the same years, there were 65,030 deaths, the births exceeded the deaths by 3,734 or  $\frac{1}{18}$ . On comparing the births and deaths of each sex, the following results appear :—

Male births.....	33,113	Female deaths.....	32,475
„ deaths .....	29,568	„ births .....	31,903
Excess of male births	3,545	Excess of female deaths	554

During the six years from 1786-91, 278 were illegitimate in 4,352 births, about  $\frac{1}{15}$ .

From 1695 to 1791, in periods of twenty years, the average annual proportion of the births to the population was as follows:—

Periods.	Average Population.	Births.	
		Annual Average.	Annual Proportion.
1695 to 1710.....	17,700	646	1 in 27
1711 „ 1730.....	20,000	667	„ 30
1731 „ 1750.....	21,500	677	„ 31
1751 „ 1770.....	23,500	781	„ 30
1771 „ 1791.....	25,000	756	„ 33

In the seven years from 1806 to 1812, the following was the number of births :—

Males.			Females.			Total.
Legitimate.	Illegitimate.	Abandoned.	Legitimate.	Illegitimate.	Abandoned.	
1,732	177	170	1,643	184	147	4,053

To an average population of 23,250, during this period (1806 to 1812), the births were in the proportion of 1 in 40, on an annual average.

The illegitimate and abandoned were, to the total births, in the proportion of 1 in 6. But Geneva at that period was a garrison-town, and also the chief town of the department of Leman, and therefore received the foundlings of that district. After the Restoration the number of such births rapidly decreased.

The following table shows the number of births in each year from 1814 to 1833.

Years.	MALES.			FEMALES.			Total.	Illegitimate Births, per Cent.
	Legitimate.	Illegitimate.	Total.	Legitimate.	Illegitimate.	Total.		
1814.....	231	48	279	193	42	235	514	17·51
1815.....	204	35	239	202	34	236	475	14·52
1816.....	215	28	243	209	32	241	484	12·39
1817.....	224	27	251	215	31	246	497	11·67
1818.....	216	37	253	236	22	258	511	11·54
1819.....	238	34	272	203	27	230	502	12·15
1820.....	224	35	259	254	43	297	556	14·03
1821.....	226	24	250	235	32	267	517	10·83
1822.....	260	29	289	224	28	252	541	10·53
1823.....	247	34	281	205	30	235	516	12·40
Total....	2,285	331	2,616	2,176	321	2,497	5,113	12·75
1824.....	265	23	288	224	29	253	541	9·61
1825.....	289	23	312	245	21	266	578	7·61
1826.....	268	18	286	213	27	240	526	8·55
1827.....	283	25	308	262	24	286	594	8·25
1828.....	272	18	290	252	14	266	556	5·75
1829.....	278	26	304	259	23	282	586	8·36
1830.....	289	21	310	272	20	292	602	6·81
1831.....	293	25	318	279	27	306	624	8·33
1832.....	312	18	330	227	18	245	575	6·67
1833.....	294	22	316	296	18	314	630	6·35
Total....	2,843	219	3,062	2,529	221	2,750	5,812	7·57
General Total }	5,128	550	5,678	4,705	542	5,247	10,925	9·99

The average annual number of births was—

In the first 10 years..... 511

In the last 10 years..... 581

In the 20 Years { Males..... 284 } 546  
                               { Females ..... 262 }

The proportion of the illegitimate to the total births was, in the first 10 years, 12·75 per cent., or about  $\frac{1}{8}$ ; in the last 10 years, 7·57, or about  $\frac{1}{13}$ ; and in the 20 years 9·99 per cent. In France, from 1815 to 1833 the per centage was 7·01; at Paris it was 35·81. As illegitimate births are always more numerous in towns than in the country, and as their proportion in the town of Geneva exceeds only by  $\frac{2}{5}$  their proportion in the kingdom of France, these results are not unfavourable.



The births increased during the second decennial period, from 1824 to 1833, 13·6 per cent., which corresponds with the population increase of 12·5 per cent. The proportion of births to the population during the 20 years, was, on an average, 1 in 46·86; whereas at the beginning of the nineteenth century it was 1 in 40.

We have the following numbers and proportions for the births of each sex:—

	1814 to 1833.		
	Total Number.	Per Centage.	Proportions.
Males .....	5,678	51·9725	100 to 108·21 or 13
Females .....	5,247	48·0275	92·39 to 100 or 12
	10,925	100·0000	

The relative proportions varied considerably in different years, as in 1818-20-21, more females than males were born. On the contrary, in 1832, the males predominated by 57 per cent.

The predominance of the males was stronger in the last ten years 1824 to 1833, than in the preceding ten, 1814 to 1823, in the proportion of 52·684 to 51·163 per cent.

On the average, 13 males were born to 12 females.

It has been remarked that a considerable difference exists in the relative proportion of the sexes in legitimate and illegitimate births; and the comparative greater excess of the males in legitimate births, is strikingly shown in the table at page 306, from which are derived the following numbers and proportions:—

	1814 to 1833.		
	Total Number.	Per Centage.	Proportions.
Legitimate { Males.....	5,128	52,151	100 to 108·99
	Females....	47,849	91·75 to 100
	9,833	100,000	
Illegitimate { Males.....	550	50,366	100 to 101·48
	Females....	49,634	98·54 to 100
	1,092	100,000	

The difference, therefore, between the males and females is in proportion of 12 to 11 in legitimate births, and 69 to 68 in illegitimate.

Per Cent.

Of the 1,092 illegitimate children born, from 1814 to 1833,

119 were abandoned, and both parents were unknown, or 10·90

Of the 119 abandoned, 4 only were acknowledged by the mothers, and none by the fathers.

The females were abandoned more frequently than the males, in the proportion of 6 to 5.

The mothers of 973 of the 1,092 children were known, and designated in the registers.

Carried forward ..... 10·90

x 2

Brought forward .....	Per Cent. 10·90
243 children were merely acknowledged by the fathers, generally at the time of registration .....	22·25
117 children were legitimated by subsequent marriages ....	10·71
The number of males and of females who were acknow- ledged and legitimated was nearly equal.	
The fathers of 613 of the 973 housed, or not abandoned children, remained unknown .....	56·14
	<hr/> 100·00

From these figures, we may presume, that of 10 illegitimate children, about  $\frac{1}{9}$  is altogether abandoned,  $\frac{2}{9}$  acknowledged,  $\frac{1}{9}$  is legitimated, and  $\frac{5}{9}$  have mothers only as legal parents. The fathers are known only in  $\frac{1}{3}$  of the cases.

The following table exhibits the number of still-births, legitimate and illegitimate, in each year, from 1814 to 1833:—

Years.	Legitimate.		Illegitimate.		Total.	Proportion to Births.
	Males.	Females.	Males.	Females.		
1814.....	11	6	4	....	21	$\frac{1}{24}$
1815.....	11	9	....	....	20	$\frac{1}{23}$
1816.....	14	7	4	3	28	$\frac{1}{17}$
1817.....	18	10	7	2	37	$\frac{1}{13}$
1818.....	15	6	4	2	27	$\frac{1}{19}$
1819.....	23	15	3	4	45	$\frac{1}{11}$
1820.....	23	18	6	5	52	$\frac{1}{11}$
1821.....	14	9	5	3	31	$\frac{1}{16}$
1822.....	15	18	3	5	41	$\frac{1}{13}$
1823.....	20	15	3	1	39	$\frac{1}{13}$
Total.....	164	113	39	25	341	$\frac{1}{15}$
1824.....	18	10	2	5	35	$\frac{1}{15}$
1825.....	13	6	....	2	21	$\frac{1}{27}$
1826.....	14	11	1	3	29	$\frac{1}{18}$
1827.....	11	14	3	3	31	$\frac{1}{19}$
1828.....	8	12	3	4	27	$\frac{1}{20}$
1829.....	16	10	2	2	30	$\frac{1}{19}$
1830.....	17	9	3	3	32	$\frac{1}{19}$
1831.....	12	15	3	5	35	$\frac{1}{18}$
1832.....	9	11	8	6	34	$\frac{1}{17}$
1833.....	15	9	3	4	31	$\frac{1}{20}$
Total.....	133	107	28	37	305	$\frac{1}{19}$
General Total....	297	220	67	62	646	$\frac{1}{17}$

In the first 10 years, the annual average was 34 still-births, or  $\frac{1}{15}$  of the births; in the second 10 years, 30, or  $\frac{1}{19}$ ; and in the 20 years (males 18, females 14), 32, or  $\frac{1}{17}$ , or 1 still-birth in 800 inhabitants. The annual variation in the numbers was considerable.

The decrease of still-births in the second decennial period was 10·95 per cent., which, as the population had increased, is a result due, in a great measure, to improved midwifery.



To the total number of still-births, the legitimate and illegitimate were as follow:—

	Total Number.	Per Centage.
Legitimate .....	517	80·03 or 4
Illegitimate .....	129	19·97 or 1
	646	100·00

From 1814 to 1833, there were 9,833 legitimate births and 517 legitimate still-births, which is 1 in 19·0 births, or 20 conceptions; in the same period, there were 1,092 illegitimate births and 129 illegitimate still-births, or 1 in 8·4 births, or 9·4 conceptions. Hence the proportion of still-births amongst illegitimate children was double that amongst legitimate; so that the chance of not being born alive was twice as great for the illegitimate as it was for the legitimate. This result may have sprung from a variety of causes which are generally connected with illegitimate pregnancy.

In the still-births, the following was the relative proportion of the sexes:—

	Total Number.	Per Centage.	Proportion.
Males .....	364	56·347	100 to 129·07 or 40
Females .....	282	43·653	77·47 to 100 or 31
	646	100·000	

To the legitimate still-births, the proportion of each sex was—

	Total Number.	Per Centage.	Proportion.
Males .....	297	57·45	100 to 135
Females .....	220	42·55	74·07 to 100
	517	100·00	

And to the illegitimate—

	Total Number.	Per Centage.	Proportion.
Males .....	67	51·94	100 to 108
Females .....	62	48·06	92·5 to 100
	129	100·00	

It will be observed that the excess of illegitimate male children was alike small in the births and still-births.

The number of males who were still-born was greater than the number of females, in the proportion of 4 to 3. The male child, therefore, was exposed, either in the womb or at the moment of birth, considering the size of its head and body, to many more casualties

than the female. This inferior vitality continues, but in a decreasing ratio, during the life of the male.

The following were the proportions of the still-births to the births:—

1 male still-born in 15.59 male births, or 16.69 male conceptions			
1 female „ 18.60 female „ 19.60 female „			
1 child „ 16.91 „ 17.91 „			
or 1 child still-born in 18 confinements.			

The number of living and still-births is next given, together with the per-centage proportions of each.

	Total Number.	Per Centage.		Total Number.	Per Centage.
Males living .....	5,678	93.98	Females living .....	5,247	94.90
„ still-born ....	364	6.02	„ still-born....	282	5.10
„ conceived ....	6,042	100.00	„ conceived....	5,529	100.00

	Total Number.	Per Centage.
Children living .....	10,925	94.417
„ still-born .....	646	5.583
„ conceived .....	11,571	100.000

If, in order to arrive at the actual proportion of the sexes at the time of conception, we add the infants born alive to the still-born, we shall obtain the following results:—

		Total Number.	Per Centage.	Proportion.
Legitimate	Males born alive 5,128	5,425	52.415	100 to 110.15 or 11
	„ still-born 297			
	Females born alive 4,705	4,925	47.585	90.78 to 100 or 10
	„ still-born 220			
		10,350	100.000	
Illegitimate	Males born alive 550	617	50.532	100 to 102.15 or 51
	„ still-born 67			
	Females born alive 542	604	49.468	97.89 to 100 or 50
	„ still-born 62			
		1,221	100.000	
Total .....	Males born alive 5,678	6,042	52.217	100 to 109.28 or 12
	„ still-born 364			
	Females born alive 5,247	5,529	47.783	91.51 to 100 or 11
	„ still-born 282			
		11,571	100.000	



Consequently, at the time of conception, there were 12 males conceived to 11 females.

The next table relates to Twin-births, from 1814 to 1833:—

Years.	Two Males.	Two Females	Male and Female.	Legitimate.	Illegitimate.	Total.	Males.		Females.	
							Born Alive.	Still-born.	Born Alive.	Still-born.
1814	....	....	1	1	....	1	1	....	1	....
1815	1	2	1	3	1	4	1	2	4	1
1816	2	5	4	10	1	11	6	2	12	2
1817	2	2	2	6	....	6	5	1	5	1
1818	3	5	3	8	3	11	4	5	11	2
1819	2	2	3	6	1	7	5	2	7	....
1820	2	3	3	6	2	8	6	1	8	1
1821	4	2	1	7	....	7	5	4	5	....
1822	2	1	8	10	1	11	10	2	8	2
1823	3	2	3	7	1	8	7	2	6	1
1824	1	3	1	5	....	5	3	....	7	....
1825	3	1	1	5	....	5	7	....	3	....
1826	8	3	2	11	2	13	13	5	8	....
1827	1	2	1	4	....	4	2	1	1	4
1828	2	2	2	6	....	6	6	....	5	1
1829	2	3	3	7	1	8	6	1	7	2
1830	4	2	3	9	....	9	9	2	6	1
1831	2	2	10	13	1	14	11	3	10	4
1832	1	2	1	3	1	4	2	1	3	2
1833	2	8	4	13	1	14	5	3	19	1
Total	47	52	57	140	16	156	114	37	136	25

The average annual number of twin-births was 7·8.

To ascertain the proportion between the twin-births and the total births, the former must be deducted from the latter:—

Births and still-births.....	11,571
Twin-births.....	156
	<hr/> 11,415

And 156 twin-births to 11,415 births bear a proportion of 1 in 73. The Sexes were divided in the following way:—

	Total Number.	Per Centage.	Proportion.
Males .....	151	48·4	100 to 93·8 or 15
Females : .....	161	51·6	106·6 to 100 or 16
	312	100·0	

In the total number of twin children, the excess of the females was very nearly equal to that of the males in the total births. Male twins occurred less frequently than female twins, and male and female twins were the most frequent.

The number and per-centage of the twin children born alive and still-born were—

	Total Number.	Per Centage.
Born alive .....	250	80·1 or 4
Still-born.....	62	19·9 or 1
	312	100·0

So that 1 twin-child in 5 was still-born; whereas, in single births, the proportion was as low as 1 in 18.

The still-births of the twins of each sex were—

	Total Number.	Per Centage.
Males .....	37	59·68 or 6
Females .....	25	40·32 or 4
	62	100·00

Therefore the proportion of male to female still-births was greater in the twin than in the single births.

The proportion of illegitimate births was the same in the twin and single births.

No Triple births occurred from 1814 to 1833.

With regard to the Deaths, M. Mallet has prepared a table which exhibits their annual number from 1551 to 1813, and from that table he has taken the following abstract, which furnishes us with the decennial number of the deaths, and their annual average during the same period:—

Periods.	Total Number.	Annual Average.	Periods.	Total Number.	Annual Averages.
1551—1560 ....	4,951	495	1681—1690 ....	7,428	743
1561—1570 ....	6,350	635	1691—1700 ....	5,660	566
1571—1580 ....	4,009	401	1701—1710 ....	6,968	697
1581—1590 ....	6,526	653	1711—1720 ....	6,041	604
1591—1600 ....	3,976	398	1721—1730 ....	6,660	666
1601—1610 ....	4,211	421	1731—1740 ....	6,053	605
1611—1620 ....	6,498	650	1741—1750 ....	6,930	693
1621—1630 ....	5,314	531	1751—1760 ....	6,761	676
1631—1640 ....	6,212	621	1761—1770 ....	7,068	707
1641—1650 ....	4,456	446	1771—1780 ....	7,395	739
1651—1660 ....	4,441	444	1781—1790 ....	7,477	748
1661—1670 ....	5,224	522	1791—1800 ....	6,676	668
1671—1680 ....	6,007	601	1801—1810 ....	6,960	696

In the three years from 1811 to 1813, the deaths amounted to 1802, and the annual average to 601.

Considerable fluctuations will be observed in the consecutive aver-



ages, but this result is occasioned by superior causes, which tend to increase or decrease the mortality above or below the usual average. By taking the averages of longer periods, these differences will disappear. Thus, on every 50 years from 1551 to 1800, the averages successively would be 516, 536, 575, 653, and 707.

The progressive increase in the number of deaths, between the years 1551 and 1800, compared with the progressive increase of the population in the same period, will be found in the following table:—

Periods of 50 Years.	Average Population.	Annual Average of Deaths.	Proportionate Increase of Population.	Proportionate Increase of Deaths.	Difference in the Increase of Population and Mortality, or Diminution of Deaths.	Average Rate of Deaths.	Decrease in Rate of Death.
1551—1600	13,000	516	100	100	....	1 in 25	....
1601—1650	14,500	536	111	104	7	„ 27	2
1651—1700	16,000	575	123	110	13	„ 28	1
1701—1750	19,500	653	150	126	24	„ 30	2
1751—1800	24,000	707	185	137	48	„ 34	4

Thus, during two centuries and a half, while the population increased in the ratio of 100 to 185, the deaths only increased in the proportion of 100 to 137; therefore the difference of 48 between these two proportions, was the decrease in the general mortality. In the sixteenth century, 1 individual in 25 died annually; whereas, in the eighteenth, there died but 1 in 34, which is an increase of 9 in the proportionate number of individuals to 1 death in the year.

The next table comprises the number of deaths and the aggregate ages of the persons who died in each year from 1814 to 1833.

Years.	Males.				Females.				Total.			
	Deaths.	Ages.			Deaths.	Ages.			Deaths.	Ages.		
		Years.	Mths.	Dys.		Years.	Mths.	Dys.		Years.	Mths.	Dys.
1814	294	11,566	7	5	370	16,005	2	21	664	27,561	9	26
1815	202	7,363	1	2	232	9,464	3	18	434	16,827	4	20
1816	219	9,674	1	16	277	12,782	1	18	496	22,456	3	4
1817	222	9,021	10	24	232	10,067	10	17	454	19,089	9	11
1818	217	7,545	7	22	299	11,477	7	5	516	19,023	2	27
1819	207	7,664	4	7	265	11,123	4	6	472	18,787	8	13
1820	239	9,788	5	14	276	12,647	4	5	515	22,435	9	19
1821	224	8,668	8	18	285	12,434	6	21	509	21,103	3	9
1822	272	10,050	0	3	280	11,372	5	29	552	21,422	6	2
1823	217	8,555	11	22	270	11,210	11	14	487	19,766	11	6
	2,313	89,888	10	13	2,786	118,585	10	4	5,099	208,474	8	17

*Continued.*

Years.	Males.				Females.				Total.			
	Deaths.	Ages.			Deaths.	Ages.			Deaths.	Ages.		
		Years.	Mths.	Dys.		Years.	Mths.	Dys.		Years.	Mths.	Dys.
1824	271	10,779	2	18	270	12,904	3	12	541	23,683	6	0
1825	276	10,253	0	9	270	12,128	8	29	546	22,381	9	8
1826	311	11,602	4	4	268	10,660	9	23	579	22,263	1	7
1827	290	10,072	9	22	297	11,737	10	0	587	21,810	7	22
1828	315	12,343	3	19	286	12,084	0	23	601	24,427	4	12
1829	269	10,785	8	0	284	13,096	9	24	553	23,882	5	24
1830	253	9,580	10	25	317	13,877	6	25	570	23,458	5	20
1831	273	10,577	11	22	287	12,776	9	27	560	23,354	9	19
1832	334	12,539	2	1	323	12,939	1	24	657	25,478	3	25
1833	317	12,374	8	8	302	12,185	9	17	619	24,560	5	25
	2,909	110,909	1	8	2,904	124,391	10	24	5,813	235,301	0	2
Total	5,222	200,797	11	21	5,690	242,977	8	28	10,912	443,775	8	19

During the first decennial period, on an annual average, 231 males and 279 females, or 510 of both sexes, died; in the last period, the numbers were 291 males and 290 females, or 581 of both sexes; and in the twenty years, the mortality consisted of 261 males and 284 females, or 545 of both sexes. It will be observed that, in the first period of 10 years, the deaths of the females exceeded the deaths of the males by  $\frac{1}{6}$ , whereas in the last 10 years the average mortality of the two sexes was almost equal.

The mortality increased 14 per cent. in the 10 years from 1824 to 1833, as a comparison of the total number of deaths in each of the two decennial periods will prove:—

1814 to 1823	5,099	100
1824 to 1833	5,813	114

This increase was in proportion to that of the births or of the population.

A reference to the last table will show that a considerable variation occurred in the number of the deaths in each of the years from 1814 to 1833, and this variation will be found to be greater than that in the number of the births. The amount of deaths in 1814 is, to that in 1815, as 3 to 2. But, with this exception, the difference between one year and another is not greater than  $\frac{1}{7}$ . A fatal fever appeared in the first months of the year 1814, and caused the deaths to exceed the births by 150, or  $\frac{1}{161}$  of the population. This heavy mortality was confined to the first months of that year, as the number of deaths in the latter months was below the average. In the following year, 1815, the number of deaths was the smallest, and the births exceeded the deaths. However, the equilibrium between the births and the deaths was not restored until ten years after the ravages in 1814.

In the year 1832, we find an excess of 82 deaths over the births, which is accounted for, in a great measure, by the prevalence of epidemical small-pox.

In 1833 the deaths bore a proportion to the population of 1 in 46.92; a very favourable ratio, and equal, within a trifle, to that of births, 1 in 46.86.



With respect to the relative mortality of the two sexes, there has always been, in an aggregate of years, an excess in the deaths of females. Thus, from 1701 to 1813 there died—

	Number.	Proportion.
Females .....	40,427	100 to 110·2
Males .....	36,663	90·7 to 100

A similar result was apparent between 1814 and 1833.

	Number.	Proportion.
Females .....	5,690	100 to 108·9 or 13
Males .....	5,222	97·7 to 100 or 12

In this period, however, the excess arose in the first ten years, from 1814 to 1823, as from 1824 to 1833 the deaths of the males exceed the deaths of the females by 5. The difference in the number of deaths of each sex, from 1814 to 1833, will be seen in the succeeding table.

Years.	Excess of Deaths.		Years.	Excess of Deaths.	
	Males.	Females.		Males.	Females.
1814.....	....	76	1824.....	2	....
1815.....	....	30	1825.....	6	....
1816.....	....	58	1826.....	43	....
1817.....	....	10	1827.....	....	7
1818.....	....	82	1828.....	29	....
1819.....	....	58	1829.....	....	15
1820.....	....	37	1830.....	....	64
1821.....	....	61	1831.....	....	14
1822.....	....	8	1832.....	11	....
1823.....	....	53	1833.....	15	....
	....	473		105	100

The excess was not, therefore, constantly on the side of the females.

Having considered the actual mortality, and the relative number of deaths of each sex, our attention will now be directed to the fluctuation in the rate of mortality at different periods of life. Beginning from the birth we shall find that the first day of existence exhibits a very heavy mortality, and that only 1 infant in about 5 survives it. The second day is three times less fatal than the first, and the third is less dangerous in a twofold degree than the second. In subsequent days the mortality subsides less rapidly, but still as regularly. In fact, the first month is very fatal, as about one-half of the children who die in their first year are carried off during that period, which is eleven times more fatal than any subsequent month: 6·85 children in 100 births are dead at the expiration of the first month.

Between the first and second months the mortality decreases in the

proportion of  $4\frac{1}{2}$  to 1, from the second to the third the proportion is 2 to 1, and 3 to 2 between the third and sixth months. The decrease is less perceptible in the last six months of the first year, in the course of which infants die in the proportion of 1 in 7·2 births.

The rate of mortality at subsequent periods of life may be seen in the following table, which exhibits, at different ages, the proportionate number of deaths, and of those who survive; with the number of individuals in proportion to 1 death, during the last part of the sixteenth century\*, and in the seventeenth, eighteenth, and the first third of the nineteenth century†.

Ages.	Per Centage Proportions of Deaths.			
	Sixteenth Century.	Seventeenth Century.	Eighteenth Century.	Nineteenth Century.
1 year .....	25·92	23·72	20·12	15·12
2 years.....	8·40	6·99	4·85	4·34
3 „ .....	4·67	5·05	3·55	2·32
4 to 5 years .....	5·36	5·24	4·64	2·62
6 „ 10 „ .....	7·59	6·60	5·75	3·63
11 „ 15 „ .....	4·52	3·68	2·48	2·50
16 „ 20 „ .....	4·65	3·86	2·69	3·30
21 „ 25 „ .....	3·74	3·67	3·28	3·85
26 „ 30 „ .....	5·28	3·90	3·25	3·47
31 „ 40 „ .....	9·28	7·64	6·64	6·54
41 „ 50 „ .....	6·25	7·31	7·34	8·46
51 „ 60 „ .....	5·76	7·39	9·47	11·56
61 „ 70 „ .....	4·50	6·89	11·41	14·35
71 „ 80 „ .....	2·90	5·61	10·01	12·47
81 „ 90 „ .....	0·95	2·08	4·02	4·96
Above 90 „ .....	0·23	0·37	0·50	0·51
	100·00	100·00	100·00	100·00

Ages.	Per Centage Proportions of Survivers.			
	Sixteenth Century.	Seventeenth Century.	Eighteenth Century.	Nineteenth Century.
1 year .....	74·08	76·28	79·88	84·88
2 years.....	65·68	69·29	75·03	80·54
3 „ .....	61·01	64·24	71·48	78·22
4 to 5 years .....	55·65	59·00	66·84	75·60
6 „ 10 „ .....	48·06	52·40	61·09	71·97
11 „ 15 „ .....	43·54	48·72	58·61	69·47
16 „ 20 „ .....	38·89	44·86	55·92	66·17
21 „ 25 „ .....	35·15	41·19	52·64	62·32
26 „ 30 „ .....	29·87	37·29	49·39	58·85
31 „ 40 „ .....	20·59	29·65	42·75	52·31
41 „ 50 „ .....	14·34	22·34	35·41	43·85
51 „ 60 „ .....	8·58	14·95	25·94	32·29
61 „ 70 „ .....	4·08	8·06	14·53	17·94
71 „ 80 „ .....	1·18	2·45	4·52	5·47
81 „ 90 „ .....	0·23	0·37	0·50	0·51
Above 90 „ .....	....	....	....	....
	....	....	....	....

\* The last 41 years, with a few exceptions.

† The first 33 years.



Ages.	Number of Individuals to 1 Death.			
	Sixteenth Century.	Seventeenth Century.	Eighteenth Century.	Nineteenth Century.
1 year .....	3·85	4·21	4·97	6·61
2 years.....	8·81	10·91	16·47	19·55
3 „ .....	14·07	13·72	21·13	39·02
4 to 5 years .....	11·38	12·26	15·40	29·85
6 „ 10 „ .....	7·32	8·93	11·62	20·82
11 „ 15 „ .....	10·62	14·24	24·63	28·78
16 „ 20 „ .....	9·36	12·62	21·78	21·05
21 „ 25 „ .....	10·39	12·22	17·05	17·19
26 „ 30 „ .....	6·65	10·56	16·19	17·96
31 „ 40 „ .....	3·21	4·88	7·44	9·00
41 „ 50 „ .....	3·29	4·05	5·82	6·18
51 „ 60 „ .....	2·49	3·47	3·75	3·79
61 „ 70 „ .....	1·90	2·16	2·27	2·25
71 „ 80 „ .....	1·40	1·43	1·45	1·44
81 „ 90 „ .....	1·24	1·17	1·12	1·10
Above 90 „ .....	....	....	....	....
	....	....	....	....

By comparing the mortality in the sixteenth and nineteenth centuries, we shall perceive that the proportionate number of deaths has decreased in the first and second years in the proportion of nearly 2 to 1; in the period from three to fifteen years of 3 to 1; from sixteen to twenty-five years of 2 to 1; from twenty-six to forty years of 3 to 1; and from forty-one to fifty years of 2 to 1. Between one and fifty years of age, therefore, the mortality of the present century has been two or threefold less than it was between the same ages in the sixteenth century. But from the age of fifty-one to sixty the number of deaths has only decreased in the proportion of  $1\frac{1}{2}$  to 1; from sixty-one to seventy, scarcely  $\frac{1}{5}$ ; and between seventy-one and eighty the proportionate mortality of the two centuries only differs to the amount of  $\frac{1}{35}$ . After eighty years of age the sixteenth century has the advantage, as, from eighty-one to ninety, proportionably more individuals die in the nineteenth than was the case in the sixteenth century; the proportions of deaths at that period of life being 100 in 124 individuals in the sixteenth, and 100 in 109 in the nineteenth century, or  $\frac{1}{9}$  in favour of the sixteenth century. Of 100 individuals at eighty years of age, there reached the age of ninety, 19·6 per cent. in the sixteenth; 14·9 per cent. in the seventeenth; 11 per cent. in the eighteenth; and 9·4 per cent. in the nineteenth century; so that the number of persons who live to ninety years of age has diminished, not on the absolute number of deaths, but on that of the individuals of eighty, upon whom the calculation should be made.

This diminished duration of life is even more perceptible above the age of ninety. In the sixteenth century, of 32 individuals at that age, 12 attained the age of 100, and 3 exceeded that term; a proportion of 0·468 at 100, or 100 in 213 at 90. In the seventeenth century, of 196 at 90, 37 lived to 100, and beyond it 16; a proportion of 0·270 at 100, or 100 in 369 at 90. In the eighteenth century, of 339 at 90 there were 12 alive at 100, and 15 also reached ages above 100: a proportion of 0·079 at 100, or 100 in 1250 at 90; and in the nineteenth century 103

at 90 give but 1 individual who attained the age of 101: a proportion of 0·009 at that age, or 1 who lived till then out of 103 at the age of 90. Therefore, of the number of individuals at the age of 90, nearly one-half lived to the age of 100 or beyond it in the sixteenth, more than one-fourth in the seventeenth, and one-twelfth in the eighteenth, but scarcely more than 1 in 100 exhibit that prolongation of life in the nineteenth century.

The figures of the probable duration of life lead to similar results, for we find, at the ages of 70 and 80, in the four centuries respectively, that the probable life was—

Years.	Sixteenth Century.	Seventeenth Century.	Eighteenth Century.	Nineteenth Century.
70.....	7·03	7·18	7·93	6·76
80.....	6·22	5·87	4·40	3·84

In each century, therefore, at the age of 70, the probable duration of life has remained very nearly the same; but at the age of 80, it has continually diminished.

The next table affords a comparison of the proportionate longevity in Geneva, and France and Belgium united.

Geneva (1814-33).				France and Belgium.—M. Burdach.			
			Years.				Years.
Of 2 individuals, one will attain....			45	Of 2 individuals, one will attain....			23
3	"	"	.... 60	3	"	"	.... 48
4	"	"	.... 66	4	"	"	.... 58
5	"	"	.... 69	5	"	"	.... 63
6	"	"	.... 72	6	"	"	.... 67
				7	"	"	.... 70
				8	"	"	.... 72
7	"	"	.... 73	9	"	"	.... 73
8	"	"	.... 74	10	"	"	.... 74
9	"	"	.... 75	11	"	"	.... 75
10	"	"	.... 76	12	"	"	.... 76
11	"	"	.... 77	13	"	"	.... 77
12	"	"	.... 78	14	"	"	.... 78
14	"	"	.... 79	16	"	"	.... 79
17	"	"	.... 80	18	"	"	.... 80
20	"	"	.... 81	21	"	"	.... 81
22	"	"	.... 82	25	"	"	.... 82
28	"	"	.... 83	30	"	"	.... 83
37	"	"	.... 84	36	"	"	.... 84
48	"	"	.... 85	43	"	"	.... 85
64	"	"	.... 86	51	"	"	.... 86
82	"	"	.... 87	60	"	"	.... 87
102	"	"	.... 88	70	"	"	.... 88
138	"	"	.... 89	100	"	"	.... 89
194	"	"	.... 90	120	"	"	.... 90
222	"	"	.... 91	170	"	"	.... 91
320	"	"	.... 92	250	"	"	.... 92
363	"	"	.... 93	350	"	"	.... 93
518	"	"	.... 94	500	"	"	.... 94
727	"	"	.... 95	700	"	"	.... 95
1,090	"	"	.... 96	1,000	"	"	.... 96
2,180	"	"	.... 97	1,400	"	"	.... 97
5,453	"	"	.... 98	1,900	"	"	.... 98



Some interest attaches itself to the preceding table, which shows out of how many men born at the same time the different ages will be reached by one of their number. It is divided into three periods, the first of which is termed the *normal duration of life*: the numbers of men increase regularly by unities, and the ages in a contrary manner. The second is considered as the *normal epoch of mortality*: the numbers of men, and the ages, increase together regularly, and by unities. The third is called an *un-normal epoch*: the numbers of men increase largely and without regularity, and the ages by unities, and in continuity.

According to this table, Geneva has a superiority over France and Belgium up to the age of 83, which embraces  $\frac{97}{100}$  of her population.

Let us now proceed to investigate the causes of the prolongation of life in the greater part of the several ages, and of the diminution in the term of existence of individuals who have attained an advanced age.

We have already stated that the mortality during the first year is now twofold less heavy than it was in the sixteenth century. Amongst the general causes of this result, we may class the diminished fruitfulness of marriages, and the more general nursing of children by their mothers. But as these causes only develope themselves gradually, the result, if due to them alone, should have gradually appeared also; and this has not been the case; for the diminution, which was scarcely one-third from the sixteenth to the eighteenth century, only became of importance in the beginning of the nineteenth. It appears that this sudden improvement may be mainly attributed to vaccination, the introduction of which is about contemporary with the present century. And in confirmation of the good which has flowed from that precious discovery of Jenner, we have seen that, since the period of its introduction, the mortality between the ages of 3 and 10 years has decreased, in a threefold degree, to what it was in the sixteenth century; and it is at that period of life that the small-pox is the most fatal. Davillard has shown that 25 in 26 deaths by that disease occur during the first ten years.

If the mortality in early childhood has been so considerably diminished by a medical discovery, and if art cannot proportionably influence it in later years, it follows that the improvement effected in early life will not be succeeded by a corresponding good progress at more advanced ages, and, therefore, that the mortality which happens in the early periods of life will not be a proper criterion by which to compare the mortality, at different ages, of distinct populations, or even of one and the same population. And this is exemplified by what has occurred at Geneva from the eighteenth to the nineteenth century. The diminution of mortality in the nineteenth century was very considerable during the first 10 years of life, and very feeble between 10 and 30 years. In the eighteenth century, from the birth to 10 years, 1 infant died in 2·57; in the nineteenth, 1 in 3·57: and from 10 to 30 years, in the eighteenth century, 1 in 5·22; and 1 in 5·48 in the nineteenth. The improvement in the latter period is barely one-seventh of that in the former. The increase of the average life from the eighteenth to the nineteenth century is also inferior in comparison with the diminution of the mortality in the first year.

This example proves that longevity should be compared with human life in the aggregate, in the periods or countries to be investigated, as the comparison will not be so accurate if it is founded on a particular epoch of life.

From one century to another, the proportionate mortality between the ages of 10 and 50 years has continued to decrease regularly and progressively. The principal causes which have contributed to so desirable a result are, doubtless, the spread of better means, the improved knowledge of medical treatment, larger, better-ventilated, and more suitable dwellings, more wholesome and more abundant food, the cessation of fearful pestilences, and the precautions taken against them, and an improved and better-regulated mode of living.

It is a great advantage that the superior vitality has appeared at the most important age, and that thereby a larger number of individuals survive the period of childhood, and attain an age when they can direct their powers to promote the general welfare.

Old age, however, has not participated in the prolongation of life. Instead of gradually advancing to a patriarchal term, it has retrograded in the scale of existence, and the number of its years has decreased.

A comparison of the relative numbers of the births and deaths is of importance in vital statistics, and the following table provides information on that part of the subject:—

Years.	Males.		Females.		Total.	
	Excess of Births.	Excess of Deaths.	Excess of Births.	Excess of Deaths.	Excess of Births.	Excess of Deaths.
1814.....	....	15	....	135	....	150
1815.....	37	....	4	....	41	....
1816.....	24	....	....	36	....	12
1817.....	29	....	14	....	43	....
1818.....	36	....	....	41	....	5
1819.....	65	....	....	35	30	....
1820.....	20	....	21	....	41	....
1821.....	26	....	....	18	7	....
1822.....	17	....	....	28	....	11
1823.....	64	....	....	35	30	....
1824.....	17	....	....	17	....	....
1825.....	36	....	....	4	32	....
1826.....	....	25	....	28	....	53
1827.....	18	....	....	11	7	....
1828.....	....	25	....	20	....	45
1829.....	35	....	....	2	33	....
1830.....	57	....	....	25	32	....
1831.....	45	....	19	....	64	....
1832.....	....	4	....	78	....	82
1833.....	....	1	12	....	11	....
Total....	526	70	70	513	371	358

In the twenty years, the births were in excess twelve, and the deaths seven years, and in one year (1824) their numbers were equal. In the case of the males, the births generally surpassed the deaths;



and with the females, the contrary happened as frequently. The total births of the males exceeded their deaths by 456; the total deaths of the females exceeded their births by 443; and the total births of both sexes exceeded their deaths by 13.

It is curious to observe that, in Geneva, as well as elsewhere, more males than females are born, and that more females than males die. This contradictory result happens in equal proportions, thus:

Births.			Deaths.		
Males .....	108·2	or 13	Females .....	108·9	or 13
Females .....	100	12	Males .....	100	12

and is accounted for by the emigrations and immigrations, the males taking the chief part in the former, and the females in the latter. The trifling excess of births which is shown in the preceding paragraph, must, should it continue so small, lead to a stationary population. But a population never remains completely in *statu quo*; and in Geneva, formerly, there was an excess of births over the deaths, which at first diminished, and now has nearly vanished. This circumstance helps to prove how feeble are the calculations by which the period when a population will be doubled is attempted to be fixed. Such attempts might raise the supposition that fecundity, longevity, mortality, and the relation of births to deaths, follow an identical course in a long series of years; but this is never the case.

A very dense population has an inferior fecundity, and a population not very fruitful has a low rate of mortality.

If, in order to ascertain the time when the population of Geneva would have doubled, a calculation had been made on the excess of births, from 1695 to 1740, three centuries and a-half would have been named as the period required. But had the diminished excess between 1786 and 1791 been taken for the basis of such a calculation, more than seven centuries would have been necessary for the realisation of the desired result. At present the births and deaths are nearly equal in number, and the population of Geneva exceeds, by one-half, its amount at the beginning of the eighteenth century. The stagnation in the movement of a population represents the condition of a town where there is scarcely proper space for the inhabitants, where the population is abundant, and where the fecundity of marriages is reduced to its minimum.

A comparison of the general prosperity of the Genevese, with their great longevity, will serve to strengthen the hypothesis of Muret, that "the duration of life in each country is in an inverse ratio to the fecundity." And this position was maintained by M. d'Ivernois, who remarked that "long life in men is accompanied by a comparatively small number of births; and by such a ratio of births the complement of the human race is preserved and its welfare promoted."

From the statements concerning the mortality, we may obtain some interesting and valuable information respecting the average duration of life. On this subject approximate figures are too frequently brought forward, and in this way: if a table indicates 100 deaths between 20 and 30 years of age, 25 years are given as the average duration of life; but this calculation is not sufficiently precise, and the following ob-

servations are founded on the actual duration, in years, months, and days, of the lives of the individuals who died.

Of 5,222 males that died from 1814 to 1833, the ages of 3 were not known; the remaining 5,219 lived, in the aggregate, 200,797 years, 11 months, and 21 days, giving an average life of.....	Y.	M.	D.
	38	5	21
Of 5,690 females that died in the same period, the ages of 2 were not known; the other 5,688 lived, in the aggregate, 242,977 years, 8 months, and 28 days, giving an average life of .....	42	8	28
10,907 individuals of both sexes lived 443,775 years, 8 months, and 19 days, giving an average life of .....	40	8	7

In the registers of this mortality the ages of the adults are generally represented by the number of years completed, while fractional parts of the years are neglected. Were we, on this account, to add 3 months 23 days to the average life of the two sexes when taken together, 41 years would then represent the average life. For a town population this average of the duration of life is considerable. In 1766, Muret estimated the average life in the Pays de Vaud, where the population is chiefly agricultural, at 35 years and 5 months.

Hitherto, in Geneva, the average of life has progressively increased in duration, and the following table sets forth the progress from the end of the sixteenth century to the year 1833.

Periods.	Males.			Females.			Averages of both Sexes.			Centesimal Increase.
	Y.	M.	D.	Y.	M.	D.	Y.	M.	D.	
End of 16th Cen- tury .....	....	....	....	....	....	....	21	2	20	100
17th Century .....	....	....	....	....	....	....	25	8	2	120
1701 to 1750 .....	29	2	26	35	8	22	32	7	22	153
1751 „ 1800 .....	31	10	12	36	11	17	34	6	11	162
1801 „ 1813 .....	35	0	29	41	5	25	38	6	0	181
1814 „ 1833 .....	38	5	21	42	8	18	40	8	7	191

The increase in the seventeenth century was considerable, but it became much greater in the eighteenth and nineteenth centuries. During the ten years from 1824 to 1833 the average duration of life was rather lower than in the ten years from 1814 to 1823, as the following figures will show:—

	Males.			Females.			Average.		
	Years.	Mths.	Days.	Years.	Mths.	Days.	Years.	Mths.	Days.
1814 to 1823....	38	10	28	42	7	4	40	11	2
1824 „ 1833....	38	1	15	42	10	0	40	5	22
Difference ...	—0	9	13	+0	2	26	—0	5	10

As the decrease happens only in the case of the males, it may be a usual rather than a casual variation.



The average duration of life varies, to some extent, in different years. Between the years of the highest and lowest averages for both sexes, the difference amounted to rather more than nine years; but in consecutive periods the averages are more regular, and the differences trifling. Thus, from 1814 to 1833, in periods of five years, the averages of the duration of life were—

	Years.	Months.
1814 to 1818.....	41	....
1819 „ 1823.....	40	10
1824 „ 1828.....	40	1
1829 „ 1833.....	40	9
Greatest difference.....	11 months.	

Notwithstanding the common notion that the stronger of the two sexes possesses a superior vitality, the fact that the superiority belongs to the weaker sex, has long been observed, and frequently exhibited in the mortality-tables of many writers. In the table of M.M. Cramer and Joly, which relate to Geneva during the eighteenth century, the following result appears:—

35,603 females died, who had lived, in the aggregate,	
1,294,914 years; their average life was.....	36·37 years.
32,376 males died, who had lived, in the aggregate,	
990,995 years; their average life was.....	30·60 „
Difference in favour of the females.....	5·77 „

This law has continued to operate since that period, but to a less though varying extent, in different years. From 1814 to 1833 the average life of each sex was—

	Years.	Mths.	Days.	
Females.....	42	8	18	..... 111 to 100
Males .....	38	5	21	..... 100 „ 90
The difference being....	4	2	27	

It is a vain endeavour to explain this phenomenon, as some authors do, by describing the life of men as more boisterous, more subject to the influence of destructive agents, as burdened with the wearying labours of life, excited by political passions, exposed to the hazards of warfare, the dangers of the ocean and other perils, and encompassed with a crowd of passions in every stage of excess; for if we carefully investigate the superior vitality of females, we shall discover that its superiority is at the highest point before birth, as only 77 females to 100 males are still-born, that it is still strong in the first year, and that it gradually lessens and becomes unimportant in the adults, so that the phenomenon is scarcely perceptible at the age when the above pernicious causes would begin to exert an influence. But, without asserting that they have no kind of connection with this phenomenon, we may infer that it springs from a primeval law of our nature, from a predisposition in our first being, from the peculiar constitution of each sex, and from the destiny decreed by the Almighty.

The average superior vitality of the female is represented by very

nearly the same figures which show the proportionate excess in the conception of males. Thus—

Average life of females.....	100		Conception of males.....	100
„ males .....	90		„ females ....	91.5

Having considered the *average* duration of life, we proceed to notice the *probable* duration of life, which the following figures will determine for the period from 1814 to 1833:—

Of 5,222 males who died, the ages of 5,219 were known; 2,609½ is the half of the latter number; at 41 years, 2,600 were dead; at 42 years, 2,634; their probable life was therefore .....	Y. M. D. 41 3 10
Of 5,690 females who died, the ages of 5,688 were known; 2,844 is the half of the latter number; at 48 years, 2,816 were dead; at 49 years, 2,871; their probable life was therefore .....	48 6 3
Of 10,912 males and females who died, the ages of 10,907 were known; 5,453½ is the half of the latter number; at 45 years, 5,466 were dead; at 46 years, 5,539; their probable life was therefore .....	45 0 29

The increase in the probable duration of life, from the end of the sixteenth century to 1833 appears in the next table.

Periods.	Probable Duration of Life.			Proportionate Increase.
	Years.	Mths.	Days.	
End of the 16th } Century .....	8	7	26	100
17th Century .....	13	3	16	153
1701 to 1750 .....	27	9	13	321
1751 „ 1800 .....	31	3	5	361
1801 „ 1813 .....	40	8	....	470
1814 „ 1833 .....	45	0	29	521

Although the figures for the first of the above periods are not, perhaps, sufficiently accurate to justify the conclusion that the probable duration of life was actually augmented five-fold in three centuries, yet a progressive increase is very apparent, and in a superior ratio to that of the increase of the average duration of life. The population of Geneva has doubled its numbers in three centuries, but the advance of its real and productive value, in the same period, has more than doubled the numerical increase.

A difference in the probable duration of life occurred between the ten years from 1814 to 1823, and the ten years from 1824 to 1833. In these two decennial periods, the probable life was—

	Males.			Females.			Average for both Sexes.		
	Years.	Mths.	Days.	Years.	Mths.	Days.	Years.	Mths.	Days.
1814 to 1823....	43	2	18	48	18	16	45	10	17
1824 „ 1833....	39	7	0	49	0	0	44	6	6
Difference	—3	7	18	+0	10	16	—1	4	11



During the last of these periods, the probable life of the females increased, whilst that of the males decreased—a result similar to that in the average life, but more prominent in this instance. But calculations respecting the probable life should be based on numerous observations during a series of years, as the figures relating to it vary, in different years, in twice as great a proportion as the figures which relate to the average life.

According to the mortality-tables of Geneva for the eighteenth century,

	Years.
The probable life of females was .....	32·60
„ of males .....	25·76
Superiority of the females.....	6·84

This superiority still exists, and from 1814 to 1833 it was found to be in the following proportion :—

	Years.	Mths.	Days.	Proportions.
Probable life of females ....	48	6	3	117·5 to 100
„ of males .....	41	3	10	100 „ 85
Superiority of the females	7	2	23	

As a further illustration of the superior vitality of females, we may add that this superiority, which is very great at the birth, suffers a decrease of one-half at the age of 1 year; that it remains nearly stationary from 5 to 20 years; from 20 to 30 years, it is a third less; at 40 years, it does not amount to more than 15 months; at 60 years, it is very trifling; and at 70 years, it is scarcely perceptible. The aged of both sexes appear to possess nearly an equal chance of living a few years beyond three-score-and-ten.

The following table exhibits the amount of the female's superior average life and probable life at different periods, from the birth to 70 years of age :—

Periods.	Average Life.	Probable Life.
	Years.	Years.
At the birth .....	7·23	4·24
„ 1 year.....	3·10	2·19
„ 5 years .....	2·90	1·83
„ 10 „ .....	2·89	1·92
„ 20 „ .....	2·39	2·10
„ 30 „ .....	1·52	1·32
„ 40 „ .....	1·29	1·23
„ 50 „ .....	1·26	0·98
„ 60 „ .....	0·92	0·62
„ 70 „ .....	0·19	0·35

The following few calculations, founded on what has preceded, may not be uninteresting :—At or about the sixth month of pregnancy, it is 72 to 1 that one child only will be born; 17 to 1 that the child will be born alive; and, if born alive, it will be 13 to 12 that the child will be a boy; and, if a boy, it will be 1 to 1 that he will live to 41 years 3 months; and should the child be a girl, it will be 1 to 1 that she will live to 48 years and six months.

At Geneva, the probable life was inferior to the average life, until the beginning of the present century, when the inferiority passed to the average life. From the sixteenth to the nineteenth century, the following were the respective amounts and proportions of the average and probable life :—

	Sixteenth Century.	Seventeenth Century.	Eighteenth Century.	1801 to 1833.
Average .....	Years. 21·21	Years. 25·67	Years. 33·62	Years. Probable.... 43·08
Probable .....	8·65	13·29	29·50	Average .... 39·69
Difference....	12·56	12·38	4·12	Difference 3·39

## Proportions.

Average .....	245	193	114	92
Probable .....	100	100	100	100

From 1801 to 1813, the superiority of the probable over the average life was but 2 years and 2 months; between 1814 and 1833, it doubled, and was—

	Years.	Mths.	Days.	Proportions.
Probable.....	45	0	29	..... 100 to 110·7
Average .....	40	8	7	..... 90·2 to 100·0
Superiority....	4	4	22	

But this superiority of the probable life is not uniform at different periods of life; and, in fact, at a certain age, it ceases, and the average life takes the superiority, and maintains it, in a small ratio, to the end of life, as the following figures will prove—the plus sign signifying the superiority of the probable life, and the minus its inferiority to the average life :—

	Years.		Years.
At the birth.....	+ 4·40	At 35 years .....	+ 0·36
„ 1 year .....	+ 5·06	„ 39 „ .....	— 0·02
„ 5 years .....	+ 4·05	„ 50 „ .....	— 0·97
„ 10 „ .....	+ 3·54	„ 60 „ .....	— 1·29
„ 15 „ .....	+ 3·20	„ 70 „ .....	— 1·55
„ 20 „ .....	+ 2·30	„ 80 „ .....	— 1·38
„ 25 „ .....	+ 1·63	„ 90 „ .....	— 0·76
„ 30 „ .....	+ 0·88	„ 95 „ .....	— 0·63

The average life and the probable life, calculated from the birth, increase to a certain period, at which they respectively reach their maximum, and from thence they continually decrease, until the most advanced age is attained. From the birth, the average life increases until 3 years of age, when it is at its maximum of 47·53 years, and decreases at the age of 4. The probable life increases until 2 years of age, when it is at its maximum of 52·17 years, and decreases at the age of 3. No very great difference exists between these two maxima,



and were they established on more extensive calculations, perhaps they would be more equal. Towards the fifth year, the average life, being on the decrease, equals the amount it was at the birth, and the probable life does the same between the third and fourth years. Some light may be thrown on the principle of this successive increase and decrease by the following illustration:—Let us suppose the occurrence of a large number of births at a certain period, and the majority of the children then born to be robust and healthy, and the minority to be weak and sickly. Now, in calculating the average life and the probable life, it is necessary to found the calculations on the number of the children who are born alive, including those who have actually breathed, if only for an hour (and in the calculations for the period between 1814 and 1833, only positive still-births have been excluded). But amongst the large number of new-born children there must be several who have but a precarious existence, and who die in a few days, or months, or at a very early age, either on account of bodily ailments or want of proper care. By including these in the calculations, we must evidently lower the average and probable rate of vitality which ought to represent the presumed longevity of healthy children, who are destined to live at least for some years.

As the sickly children die, so does the probable life of the healthy increase; and in consequence of many deaths taking place soon after birth, the probable life is subject to a rapid increase.

The probable life of a child who has lived 1 day is 14 months superior to that of a child just born; of a child 2 days' old, it is 20 months superior; and at 3 days' old, the child possesses a superiority of 2 years. At the end of the first month, the superiority is 4 years, and at the end of the first year, it is more than 6 years. The superiority does not cease until the second year, when the probable life is at its maximum, and the child has then gained 7 years. At this period, the young generation is entirely free from the early-doomed and ephemeral children.

During the increasing vitality, the child who lived a certain number of days or months, gained, not only the time of its existence between the inferior and superior age, but also the quantity by which the probable life of the superior exceeded the probable life of the inferior age.

Let us now investigate the period of decrease. It has before been observed that the average life continually decreased from 3, and the probable life from 2 years. But we may easily understand that a man by living one year of actual life, does not lose a whole year of his probable life. In advancing one year in his career, he has increased the age at which he will probably die, that is to say, that, although there remains in reality a less time for him to live than there was a year before, the time which probably remains for him to live, if added to the time he has already lived, will form a total superior to that of his probable life and age in the preceding year. This position will be made more clear by the following example:—The probable life of an individual at 21 years of age is 39 years and 1 month, which, with the 21 years already lived, make a total of 60 years and 1 month. At 22 years, the probable life is 38 years and 5 months, which, with the 22 years already lived, make a total of 60 years and 5 months. And i

the age at which he will probably die had not increased in the year expired between the ages of 21 and 22, he would have had a probable life of only 38 years and 1 month at the latter age. Thus 4 months are gained or added to the aggregate life by living from 21 to 22 years of age. The advantage gained in the period of decrease is the time which expires between the inferior and the superior age, less the quantity by which the probable life of the superior age is below that of the inferior age.

The probable life, in its decrease, does not maintain a uniform rate. In the first years which follow the maximum of the probable life, the decrease is very feeble, and the advantage to vitality is proportionably very great. A child of 5 years of age has a probable life of only one year less than a child of 2 years, although the former has lived three years longer than the latter.

From 5 to 50 years the decrease of the probable life is more important and regular. During that period it decreases in the ratio of about 9 months to every year of life, which may be looked upon as an average annual gain of three months to the term of life. At the more advanced periods of life the decrease is not so considerable, as from 60 to 70 years the probable life is diminished only by 4 years and a-half, from 70 to 80 only by 3 years, and from 80 to 90 by no more than 8 months. Thus the more advanced in age a person becomes the less rapid is the rate of decrease in the probable number of years which separate him from the tomb. If from the age of 60 to 70 the rate of decrease were the same as it is from 30 to 40, an individual at the age of 70 would have a probable life of only 3.42 years; whereas at the age of 70, by the actual rate of decrease, a person possesses a probable life of nearly double that amount, or 6.76 years. Above 80 years the rate of probable life is nearly stationary: it is the same at the ages of 83, 84, 89, and even 92. At 84, 85, and 86 years of age the average life is the same. It results from these observations on the decrease of probable life, that it is greatest in the period of life between childhood and old age, and least in those two extreme periods of life.

As the maximum vitality does not appear until the removal of the ephemeral and early-doomed children, it follows that a diminished mortality of young children is marked by the nearer approach of the maximum vitality to the period of birth. The following table exhibits the relative proportions between the maximum vitality and the period of birth in the average life and the probable life at Geneva from the sixteenth century to 1813, and the like proportions, in the nineteenth century, for France and Belgium, according to Duvillard and Quételet, compared with the twenty years from 1814 to 1833.

		1814 to 1833.	1801 to 1813.	1761 to 1800.	1701 to 1760.	Seven- teenth Century.	Six- teenth Century.	Nineteenth Century.	
								France.	Belgium.
Average	{ Birth.....	1,000	946	826	806	631	521	706	790
	{ Maximum	1,000	1,000	947	897	773	644	904	....
Probable	{ Birth.....	1,000	902	718	614	294	191	451	554
	{ Maximum	1,000	964	940	872	674	521	862	957



These figures are the proof of a considerable increase of vitality during three centuries, especially at the period of childhood.

In speaking of the vitality of the two sexes we have alluded to the superior vitality of the female, and in pursuing that subject we may remark that this superiority is very prominent during the first year. Thus, in the first day only 1 girl in 65 dies to 1 boy in 42; in the first month 1 girl in 17 to 1 boy in 13; and in the first year but 10 girls in 80 to 10 boys in 66. In the second year the difference, although on the decline, is still strongly marked on the contrary. From 6 to 8, and especially from 11 to 17 years, fewer boys than girls die; but from 19 years the superior vitality is again on the side of the girls, with slight variations. It is not until 21 years that the sexes become numerically equal. From that period the females predominate in proportion to the superior vitality which they then possess. At 21 years a man has an average life of 35·91 years, and a woman 37·81 years. In 100 births there remain, in proportion, at 50 years of age, 22·0675 men and 23·1776 women, which bear the same relative proportion, as 35·91 and 37·81.

The following table will show the relative mortality and vitality of each sex at different ages, in proportion to 100 births:—

Ages.	Males.		Females.	
	Mortality.	Vitality.	Mortality.	Vitality.
Birth .....	....	51·9725	....	48·0275
1 month.....	4·3319	47·6406	2·6348	45·3927
1 to 3 months .....	1·4043	46·2363	0·9116	44·4811
3 to 6 „ .....	1·0358	45·2005	0·5830	43·8981
6 months to 1 year....	1·7723	43·4282	1·3846	42·5135
Total of 1 year....	8·5443	....	5,5140	....
2 years .....	2·1911	41·2371	1·8236	40·6899
2 to 5 years.....	2·3502	38·8869	2·1531	38·5368
5 „ 10 „ .....	1·7723	37·1146	1·7482	36·7886
10 „ 15 „ .....	1·1954	35·9192	1·3337	35·4549
15 „ 21 „ .....	2·3102	33·6090	1·9000	33·5549
21 „ 30 „ .....	3·8937	29·7153	3·2255	30·3294
30 „ 40 „ .....	3·3060	26·4093	3·1324	27·1970
40 „ 50 „ .....	4·3418	22·0675	4·0194	23·1776
50 „ 60 „ .....	6·0246	16·0429	5·6572	17·5204
60 „ 70 „ .....	7·4991	8·5438	7·6498	9·8706
70 „ 80 „ .....	5·9945	2·5493	6·8564	3·0142
80 „ 90 „ .....	2·3700	0·1793	2·6934	0·3208
90 „ 99 „ .....	0·1793	....	0·3208	....
	51,9725		48·0275	
	100 births.			

Here we observe that, between 60 and 70 years of age, males and females die in almost equal proportions; that at 90 a few more females survive than males; but that at 98 there remains but one male and one female who died at 99.

It has long been customary to divide human life into periods of infancy, youth, maturity, and old age; we will now consider how these classifications are confirmed by the probable duration of life. We have already stated that the presumed future vitality reached its maximum between 2 and 3 years of age: these are the years of infancy; and of 100 deaths 19·786 take place in that period. On emerging from infancy, at 3 years, the child has a probable life of 52 years, therefore the time which elapses between 3 and 55 years will be the period of usual or ordinary life, the term probably attained by the children of 3 years; the deaths in that period being 40·158 per cent. At 55 years of age the probable life is 15, therefore from 55 to 70 we shall enter the period of advanced life, during which period the deaths amount to 21·472 per cent. Beyond 70 years old age is encountered, and the remaining 18·584 per cent. disappear. The four periods of life will bear the following proportions to the general mortality:

3 first years, or infancy.....	19·786 per cent.
3 to 55 years, or ordinary life .....	40·158 „
55 to 70 years, or advanced life .....	21·472 „
Above 70 years, or old age.....	18·584 „
	<hr/>
	100·000 „

One-fourth is removed at 8 years and 4 months (4 years and 10 months for the males and 12 years and 9 months for the females); one-half at 45 years (41 years and 4 months for the males, and 48 years 7 months for the females); and three-fourths are no more at 65 years and 10 months (64 years for the males, and 67 years for the females).

To show the number of individuals who were of an age to labour for themselves and others, M. Quételet, in 1834, produced the following proportions for the following countries: for every 100 individuals below 15 years there were, above that age :

In France .....	220 individuals.	In England .....	157 individuals.
Sweden .....	211 „	Ireland .....	143 „
Belgium.....	200 „	United States ...	122 „

The proportion at Geneva is much superior to any of the preceding, being 251 to 100.

We now approach the conclusion of our paper, and turn, in the last place, to the consideration of the influence of the seasons. It is well known that this influence is less felt in towns than in the country, as the inhabitants of the former can better protect themselves from variable temperatures. And in the case of Geneva, the population being engaged in handicrafts and manufactures, so that employment does not alter in different seasons; the reformed Protestant religion (which allows of no carnival, and permits marriage at all periods of the year) being that of nearly  $\frac{5}{6}$  of the population; and as there exists no particular circumstance to exert a disturbing influence on the births, marriages, and deaths, their proportions should exhibit only such variations as are caused by solar and atmospheric influence. The first table contains the actual number of births from 1814 to 1833, according to the months in which they occurred, with proportions: each month is supposed to consist of thirty-one days.



Months.	Actual Numbers.	Proportions in each Month.	Above and below the Average.	Males, per Cent.	Females, per Cent.
January .....	959	1.0338	+ 0.0338	51.51	48.49
February .....	904	1.0702	+ 0.0702	53.65	46.35
March .....	1,028	1.1082	+ 0.1082	53.30	46.70
April .....	972	1.0828	+ 0.0828	52.98	47.02
May .....	985	1.0619	+ 0.0619	54.11	45.89
June .....	879	0.9792	— 0.0208	48.69	51.31
July .....	858	0.9249	— 0.0751	52.68	47.32
August .....	894	0.9638	— 0.0362	53.58	46.42
September ....	875	0.9747	— 0.0253	49.60	50.40
October .....	863	0.9303	— 0.0697	49.59	50.41
November ....	806	0.8978	— 0.1022	51.11	48.89
December .....	902	0.9724	— 0.0276	52.10	47.90
	10,925	12.0000			

According to seasons the proportions will be as follow :—

Astronomical.				Atmospherical.			
Winter ....	3.2122	of which are males	52.82	....	3.0764	of which are males	52.42
Spring ....	3.1239	„	51.92	....	3.2529	„	53.46
Summer..	2.8634	„	51.95	....	2.8679	„	51.65
Autumn..	2.8005	„	50.93	....	2.8028	„	50.10
	12.0000				12.0000		

It will be seen by the table that five of the months were above the average and seven below it.

The following is the monthly order of the fecundity, according to the above proportions, together with the months in which the conceptions occurred :—

	Births.	March.	April.	February.	May.	January.	
		1·1082	1·0828	1·0702	1·0619	1·0338	
	Conceptions.	June.	July.	May.	August.	April.	
B.	June.	September.	December.	August.	October.	July.	November.
	0·9792	0·9747	0·9724	0·9638	0·9303	0·9249	0·8978
C.	September.	December.	March.	November.	January.	October.	February.

Although the difference between one month and another is not very great, as the most productive month exceeded the least productive only by  $\frac{1}{5}$ , periods of increase and decrease may still be observed, which divide the year into two great periods, in each of which there are four consecutive months, and into two small periods, in each of which there are but two consecutive months. The principal period of increase commences in December, and terminates in March, the month of the maximum of the births; the principal period of decrease is from April to July, the month of the secondary minimum of births; the secondary period of increase consists of August and September, the month of the secondary maximum; and the secondary period of decrease includes October and November, the month of the minimum of births. These periods will, therefore, stand thus :—

	December.	January.	February.	March.
Increase, principal period	0.9724	1.0338	1.0702	1.1082 (principal maximum.)
	March.	April.	May.	June.

			April.	May.	June.	July.	
Decrease,	„	„	1·0828	1·0619	0·9792	0·9249	(secondary minimum.)
			July.	August.	September.	October.	
			August.	September.			
Increase, secondary period			0·9638	0·9747	.....		(secondary maximum.)
			November.	December.			
			October.	November.			
Decrease,	„	„	0·9303	0·8978	.....		(principal minimum.)
			January.	February.			

The conceptions, less numerous in winter, begin to increase in March, reach the average in April, and continue to increase in May and June, when they arrive at their maximum. After June, they decrease a little, although in July and August they are numerous, and above the average. They fall considerably in October, rise again in November, and equal the numbers of March or September in December. A decrease occurs in January, and the minimum appears in February.

In proportion to the annual number, the conceptions were  $\frac{528}{1000}$  in the six warm months, from April to September, and  $\frac{472}{1000}$  in the six cold months, from October to March. The most productive period occurs between the vernal equinox and the summer solstice; the next in the productive order is between the summer solstice and the autumnal equinox; then that from the autumnal equinox to the winter solstice; and, lastly, as the least productive, the period between the winter solstice and the vernal equinox.

The per-centage proportions of the births of each sex, according to the months, has been given in the first table. With regard to the conceptions of each sex, if we add the still-births to the births, it will be seen that the average is rather exceeded during some months by the males, and during five months by the females. Thus:

	February.	August.	May.	March.	April.	December.	July.
Male excess....	54·04	53·88	53·83	53·44	53·26	52·83	52·38
	May.	November.	August.	June.	July.	March.	October.
	November.	January.	October.	September.	June.*		
Female excess....	51·29	51·28	50·43	50·21	49·08		
	February.	April.	January.	December.	September.		

The movement in the monthly proportions, as regards the sexes, is not so regular as it is in the case of the general births. It furnishes us, however, with the inference that males are conceived in the greatest proportion in the months when the general conceptions are most numerous; and this occurs from May to August, when, in comparison with the months from December to March, the conceptions are as 22 to 21.

With respect to marriages, the influence exercised on them by the seasons is probably not very considerable, in consequence of their being

\* June here appears to be below the average, if it is 50; and by taking 50, the excess would be 50·92 for the males, which is superior to the female excess in October and September.



more intimately connected with the human will; and, therefore, we have but little to observe in reference to marriages and the seasons of their occurrence.

The following table shows the total number of marriages from 1814 to 1833, classed according to the months in which they occurred, with proportions to mark the relation of the months to the marriages:—

Months.	Total Number.	Proportions for each Month.	Above and below the Average.
January .....	193	0·6288	— 0·3712
February .....	249	0·8895	— 0·1105
March .....	330	1·0752	+ 0·0752
April .....	356	1·1990	+ 0·1990
May .....	267	0·8700	— 0·1300
June .....	303	1·0198	+ 0·0198
July .....	324	1·0557	+ 0·0557
August .....	307	1·0003	+ 0·0003
September .....	302	1·0166	+ 0·0166
October .....	344	1·1208	+ 0·1208
November .....	338	1·1371	+ 0·1371
December .....	303	0·9872	— 0·0128
	3,616	12·0000	

It will be observed that the months in which there were the fewest marriages are the three coldest in the year, December, January, and February, and next to them the month of May. On the other hand, they were the most frequent in the autumnal months.

If a comparison is made of the monthly proportion of marriages and of conceptions, no particular relation will be found to exist between them; for April, although it is the first month with respect to the number of marriages, is but the fifth as regards the conceptions; and May, the last month but two for marriages, ranks as third for conceptions.

In considering the mortality relatively to the seasons, we shall find a considerable influence in operation, and that the deaths are affected in a greater degree than the births, inasmuch as there is a difference of one-third between the months of the highest and lowest mortality.

The variations between one month and another were more violent in former times than at present, owing to frequent epidemics. During the month of August 1648, there were 152 deaths, whereas in the same period of the previous year, there were but 27, and in the same period of the following year but 22. In like manner, 275 deaths occurred in August 1686, only 38 in the same month of the previous year, and no more than 50 in that month of the following year. Such differences in the rate of mortality appear most frequently and intensely in the summer months.

The following table sets forth the number of deaths, in periods from 1632 to 1833, arranged according to the months, with proportions to show the monthly variations.

Months.	1632 to 1700*.		1701 to 1743†.		1755 to 1800.		1814 to 1833.		Total‡.		Above and below the Average.
	Total Number.	Proportions.	Total Number.	Proportions.	Total Number.	Proportions.	Total Number.	Proportions.	Total Number.	Proportions.	
January .....	3,835	1·1424	2,648	1·1993	3,312	1·1248	1,077	1·1616	11,744	1·1551	+ 0·1551
February .....	3,251	1·0640	2,385	1·1861	3,150	1·1751	1,021	1·2093	10,589	1·1440	0·1440
March .....	3,524	1·0497	2,329	1·0548	3,347	1·1367	1,100	1·1864	11,127	1·0944	0·0944
April .....	3,254	1·0015	2,249	1·0525	3,242	1·1377	952	1·0610	10,520	1·0692	0·0692
May .....	3,347	0·9970	2,159	0·9778	2,724	0·9251	905	0·9761	9,878	0·9716	— 0·0284
June .....	2,788	0·8582	1,741	0·8148	2,485	0·8721	808	0·9005	8,408	0·8545	0·1455
July .....	2,813	0·8379	1,701	0·7704	2,322	0·7886	740	0·7981	8,154	0·8020	0·1980
August .....	3,624	1·0795	1,950	0·8832	2,609	0·8861	827	0·8919	9,657	0·9498	0·0502
September .....	3,415	1·0512	2,422	1·1336	2,829	0·9927	830	0·9255	10,165	1·0332	+ 0·0332
October .....	2,973	0·8856	2,297	1·0403	2,851	0·9683	839	0·9049	9,669	0·9510	— 0·0490
November .....	3,077	0·9472	1,993	0·9325	2,700	0·9475	816	0·9094	9,232	0·9383	0·0617
December .....	3,645	1·0858	2,108	0·9547	3,078	1·0453	997	1·0753	10,542	1·0369	+ 0·0369
	39,546	12·0000	25,982	12·0000	34,649	12·0000	10,912	12·0000	109,685	12·0000	...

\* This period includes 67 years, as 1653 and 1657 are omitted. The deaths by pestilence have been deducted.

† A period of 40 years—1702, 1707, and 1734 are omitted.

‡ Reckoned on the preceding columns, with the addition of the deaths for the 11 years, 1801 to 1811.



The proportions, according to seasons, will be—

	Astronomical.	Atmospherical.
Winter .....	3·3935	3·3160
Spring .....	2·8953	3·1352
Summer .....	2·7850	2·6063
Autumn .....	2·9262	2·9225
	12·0000	12·0000

It will be found, in the different periods comprised in the preceding table, that from 5 to 7 months show an excess over the average number of deaths. These months always include the four first of the year, December, and generally September. May and November are always a little below the average, and frequently this is the case with August and October. The lowest rate of mortality always appears in June and July.

With regard to the number of deaths in the table, the months will rank in the following order:—January, February, March, April, December, September, May, October, August, November, June, and July. The months of August and September, which formerly were very sickly, by reason, perhaps, of epidemical fevers, are now more healthy. During the seventeenth, and the first half of the eighteenth century, January had the greatest number of deaths; but in subsequent periods, the maximum mortality has occurred in February; the minimum has been invariably in July.

The periods of increase and decrease in the number of deaths will be found to be nearly similar to the like periods in the number of births. As regards the former, there is, in the first place, a period of increase which commences in October or November, and terminates in January or February, the month of the maximum mortality. Then follows a period of decrease, which begins in February or March, and ends in July, the month of the minimum mortality. The increase in the number of deaths re-appears in August, and continues until September, which month, since the eighteenth century, has had the secondary maximum. One remaining month, which, since the seventeenth century, has been October, exhibits a second decrease of deaths, and contains the secondary minimum. The following is the movement of the mortality in accordance with these periods:—

	November.	December.	January.			
Period of increase	0·9383	1·0369	1·1551 (maximum.)			
	February.	March.	April.	May.	June.	July.
„ decrease	1·1440	1·0944	1·0692	0·9716	0·8545	0·8020 (minimum.)
		August.	September.			
„ second increase		0·9498	1·0332 (secondary maximum.)			
		October.				
„ „ decrease		0·9510 (secondary minimum.)				

The mortality, therefore, is high during the cold months, and in

the beginning of spring; it is lower in the summer season, but rises again in August and September.

Some light may be thrown on the question of the influence of the seasons on the mortality of the two sexes by the following table, which shows the number of deaths of each sex, from 1755 to 1833 (1812-13 excepted,) according to the months, and the monthly proportions:—

Months.	Males.		Females.		Above and below the Average.
	Total Number.	Proportions.	Total Number.	Proportions.	
January .....	2,512	1·1323	2,749	1·1541	— 0·0218
February .....	2,343	1·1593	2,610	1·1965	0·0372
March .....	2,444	1·1017	2,830	1·1882	0·0865
April .....	2,433	1·1332	2,584	1·1210	+ 0·0122
May .....	2,053	0·9254	2,319	0·9736	— 0·0482
June .....	1,883	0·8772	1,996	0·8657	+ 0·0115
July .....	1,792	0·8078	1,848	0·7759	0·0319
August .....	1,983	0·8939	2,100	0·8817	0·0122
September .....	2,142	0·9975	2,186	0·9484	0·0491
October .....	2,178	0·9817	2,221	0·9325	0·0492
November .....	2,041	0·9506	2,121	0·9199	0·0307
December .....	2,306	1·0394	2,483	1·0425	— 0·0031
	26,110	12·0000	28,047	12·0000	

We may conclude from these figures that the mortality of the two sexes, according to the seasons, does not differ materially; the greatest difference is not  $\frac{1}{12}$ ; still the regularity in the occurrence of the differences may lead to the following results:—A severe season affects females more powerfully than males. During the four winter months, from December to March, more females die than males, in the proportion of 103·35 to 100. In the months of April, June, July, August, September, and October, the mortality of the males is greatest, being in the proportion of 103·05 to 100 females. But in May, more females than males die, in the proportion of 105·2 to 100; an evidence of the more fatal influence of spring on their animal economy in general.

If a comparison be made of the proportion of births and deaths in the different months, it will be perceived that the number of both births and deaths is above the average in the first four months of the year. The larger number of births at that period of the year may be attributed to the more numerous conceptions in the warm months of spring and summer.

At Geneva, June and July are the months in which conceptions are the most numerous, and the mortality the lowest. The reverse is the case in February, which is the month of the greatest mortality, and, at the same time, of the smallest number of conceptions. Thus the maximum of the mortality corresponds with the minimum of the conceptions, and *vice versâ*.

We have now traced the progress of the population of Geneva, in the several branches of vital statistics, through many years. In early periods, this population, numerically small, was decimated by a heavy



mortality, frequently exposed to fatal pestilences, and produced a comparatively large number of infants, of whom but a very small minority lived to the age of puberty. With the advance of civilization, and the rise of prosperity, marriages became less fruitful, the mortality decreased, the duration of life was considerably augmented, and the population not only increased in numbers, but could boast of a much larger proportion of men in the prime of life. At the present day, the fecundity is at its minimum, longevity is considerable, the small number of births and deaths is, perhaps, not equalled in proportion by any town population, marriage is contracted at a more advanced period of life, the population is nearly stationary, and is increased only by immigration and the prolonged duration of life.

In closing this abstract it is but justice to M. Mallet to observe that his memoir can only be properly appreciated by a careful perusal of the original. Many useful suggestions and much valuable assistance will doubtless be derived by subsequent writers from the labours of M. Mallet on the important subject of vital statistics.

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*Sanitary Statistics of the Metropolis.* By R. THOMPSON JOPLING.

[Read before the Statistical Society of London, 14th April, 1851.]

At the present period, when the sanitary condition of towns is justly engaging so much public attention, a few observations bearing on vital statistics may not be without interest.

Till within a very recent period, this subject has been almost wholly neglected; and whilst every branch of scientific investigation has been steadily on the increase, this alone appears to have been passed over as apparently unworthy of attention. Society, with strange apathy, seems to have forgotten how much the durability of life depends on the physical agents which surround it, and to have paid little or no attention to what, with all, must be a primary consideration—health and longevity.

Until the establishment of a uniform system of registration, statisticians were denied the means of arriving at anything like a correct estimate of the probabilities of life; and, whilst the means at present in use must necessarily be defective, owing to the difficulty of procuring correct returns, yet we may hope, at no great distance of time, with the present rapid increase of knowledge, to be able to overcome obstacles which now appear insurmountable, and to arrive at more satisfactory and correct data.

To the philosopher, the merchant, and artisan, this subject is of great importance, and embraces in its bearing objects of much interest. Health, and its relation to longevity, must arrest the attention of all who hope to reach the allotted period of life—three-score years and ten. Daily experience demonstrates how much lies within the reach of man to add to his physical powers, and even to prolong existence; and though we cannot hope, through the adoption of sanitary measures, to banish from our cities and towns the usual attendant of civilized societies—disease, yet we may reasonably expect, by means of well-devised hygienic regulations, to deprive it of much of its

malignancy, and to mitigate in a great measure those fearful epidemics which are at once the scourge and terror of us all.

When we look at the dense population of London and other chief towns of England, and see their busy crowds engaged in the tumultuous occupations of life, careworn in face, and prematurely old in body, the reflective mind naturally inquires, what are the causes which produce such a state of things, and what their action on the health of society? The answer may be found in the weekly bills of mortality, which show the premature deaths, and the paucity of those who reach forty years of age. Absorbed in the anxious cares of subsistence, the great bulk of mankind become indifferent to every other pursuit, and, so long as health remains, care little for anything beyond. To this cause we must ascribe the general indifference exhibited, not only to sanitary measures, but also to the principle of life-assurance, the necessity for which, though universally admitted, is individually not felt; the old adage constantly supplying its place,

“ All men count all men mortal but themselves.”

The first subject to which I shall direct attention is that of population. Taking the years from 1831 to 1841 as a basis for calculation, it is purposed finding the number of persons inhabiting London in 1850, and every succeeding 10 years, for the space of a century, *i. e.*, till the year 1950. Thus—

If  $a$  = the population at the time of the census in 1831,  
 $b$  = the same in 1841,  
 $c$  = the period elapsed since 1841,  
and  $d$  =  $1 +$  annual rate of increase,

Then  $\left(\frac{b}{a}\right)^{\frac{1}{10\cdot0219}} = d$

and  $\frac{\log. b - \log. a}{10\cdot0219} = \log. d$

$\therefore \log. b + (\log. d \times c) = \log.$  of the population at the period required.

By this method the following table was formed :—

TABLE I.

Year.	Population.	Rate of Increase.
1850.....	2,230,910	} .01515
1860.....	2,602,101	
1870.....	3,035,051	
1880.....	3,540,039	
1890.....	4,129,049	
1900.....	4,816,062	
1910.....	5,617,384	
1920.....	6,552,033	
1930.....	7,642,095	
1940.....	8,913,742	
1950.....	10,396,857	

From the above table, it appears that the population of London in 1900 will be 4,816,062, supposing the ratio of increase to continue the same as at present, namely, 1.515 per cent. annually. At the com-



pletion of the century, in 1950, the inhabitants of the metropolis will have reached the enormous amount of 10,396,857.

On referring to the first and second weekly reports of the Registrar-General for the year 1850, I find that the number of persons in London to an acre, in 1849, was 30; of the number to each inhabited house at the same period, 7·4, *i. e.*, in every ten houses there were 74 persons; and in the third weekly report, that the metropolis covered a space of 73,715 acres, or about 115 square miles, including Hampstead, Wandsworth, and Lewisham.

The following table shows the space and number of houses required for the inhabitants of London during every decennial period from 1850 to 1950 inclusive, assuming that 30 persons live on an acre, and 7·4 in a house :—

TABLE II.

Year.	Acres.	Houses.	Year.	Acres.	Houses.
1850....	74,364	301,474	1910....	187,246	759,106
1860....	86,737	351,735	1920....	218,401	885,409
1870....	101,168	401,142	1930....	253,740	1,032,729
1880....	118,001	478,384	1940....	297,125	1,204,559
1890....	137,635	557,979	1950....	346,562	1,404,981
1900....	160,535	650,819			

In the above estimate of 30 persons to an acre are included several parts of London at present but thinly populated, such as Wandsworth, Hampstead, and Lewisham, which accounts for the small number of persons apparently distributed over the above-mentioned space.

According to the returns of the several water-companies, 155½ gallons of water are daily supplied to each inhabited house in London. In Table II. it is computed that a house is inhabited by 7·4 persons, so that the average quantity of water supplied to an individual is 21 gallons, inclusive of the amount used for buildings, street-waterings, and domestic purposes. Table III. has therefore been formed on the assumption that 21 gallons per diem is the average quantity required :—

TABLE III.

Year.	Gallons of Water Daily.	Year.	Gallons of Water Daily.
1850.....	46,849,110	1910.....	117,965,064
1860.....	54,644,121	1920.....	137,592,693
1870.....	63,736,071	1930.....	160,486,095
1880.....	74,340,819	1940.....	187,188,582
1890.....	86,710,029	1950.....	218,333,997
1900.....	101,137,302		

From this table it appears that, in 1850, the quantity of water that ought to have been supplied to the metropolis was 46,849,110 gallons, allowing 21 as the average for each person. In 1900, London will require 101,137,302 gallons; and in 1950, the amount requisite will be 218,333,997 gallons, *a quantity the present means in use would be wholly incapable of supplying.*

Leaving the quality for future consideration, I purpose showing the amount of sewage hourly infiltrating the Thames; and as this is

the source to which we must ultimately look for the chief supply of water to meet increasing demands, it is obvious to all how important a subject is the question of its purification, as bearing not only on health, but also on national wealth. Regarding the Thames at present as little better than a common sewer, it is now calculated the amount of excrementitious substances that are daily poured into it.

Modern physiologists estimate the quantity of solid matter yielded by an individual in the course of 24 hours, at about 5 ounces, and the average amount of liquid at 2 pints. In the following table, the calculation is based on the assumption that 2 pints is the quantity contributed by each person to the sewers of London\* :—

TABLE IV.

Year.	Gallons of Sewage Daily.	Year.	Gallons of Sewage Daily.
1850.....	557,728	1910.....	1,404,346
1860.....	650,525	1920.....	1,638,009
1870.....	758,763	1930.....	1,910,549
1880.....	885,010	1940.....	2,228,436
1890.....	1,032,263	1950.....	2,599,215
1900.....	1,024,016		

From this it appears that, in 1850, the number of gallons of sewage which passed into the river was 557,728. During 1900, there will be 1,024,016, and in 1950, it will have increased to 2,599,215 gallons. In the above estimate, it must be borne in mind that at present many houses in the metropolis are not sewered at all; but the loss derivable from this source is more than compensated for by the surplus residua of manufactories, slaughter-houses, &c.

Much surprise has often been expressed at the indifference shown by a great commercial and agricultural country to the evident loss of wealth arising from the waste of so much valuable manure. In 1828, attention was first directed to this subject by Mr. John Martin, who, in a pamphlet bearing on the question of the purification of the river Thames, first pointed out the loss the nation yearly experienced through neglect of so evident a source of wealth. He was subsequently followed in the same path by Liebig, whose chemical investigations still further contributed to arouse public attention to the subject. Had it not been for the labours of the above gentlemen, the subject might still have remained in abeyance, and the farmer left in the continuance of no better prospect than that derived from his present inferior manures, when he might be supplied with a better article at one-fourth the present price. In 1827, the importation of bones alone, for agricultural purposes, amounted to 40,000 tons, and Mr. Huskisson estimated their cost to be from 100,000*l.* to 200,000*l.* sterling; and this is but a tithe of what the outlay for guano has been, the fertilizing properties of which are not superior to the sewage of London.

But the most important question connected with this subject is the effect produced on the health of towns, through the want of a comprehensive and well-devised system of sanitary measures; experience demonstrating how much a healthy condition of cities depends on

\* Older authorities estimate this at about 4 pints.



efficient drainage, open and airy streets, and a plentiful supply of water. As population advances, excrementitious substances must of necessity increase; and if more than a balance between cause and effect, *i. e.*, between health and one of the chief exciting causes of disease, is to be maintained, hygienic measures must increase also, and *corporate* and *private* interests succumb before comprehensive and active measures for the general good.

With a view to show the difference in mortality between London as a town, and England and Wales collectively, I have prepared Table V. in which is given the annual number of deaths to 100,000 persons\* (50,000 males and 50,000 females); also the number out of which one will die in each year, including the difference per cent. between the metropolis and England and Wales, distinguishing ages, in order that it may be seen at what period of life the rate of mortality is most unfavourable in London, together with the difference per cent. in the mortality for males only.

In the three last columns of the following table, those figures having the sign plus (+) before them indicate the excess of mortality in London over that of England and Wales, and those having the symbol minus (—) the decrease:—

TABLE V.

Ages.	Males and Females.						Males only.
	England and Wales.		London.		Difference of Mortality.	Difference per Cent.	Difference per Cent.
	Number of Deaths to 100,000 Living.	Number out of which one will die in each Year.	Number of Deaths to 100,000 Living.	Number out of which one will die in each Year.			
0 and under 1	17,975	6	20,662	5	+ 2,687	+ 14·95	+ 14·19
1    "    2	6,549	15	10,280	10	+ 3,731	+ 56·97	+ 59·47
2    "    3	3,511	28	5,247	19	+ 1,736	+ 49·44	+ 50·98
3    "    4	2,500	40	3,825	26	+ 1,325	+ 53·00	+ 55·24
4    "    5	1,842	54	2,701	37	+ 859	+ 46·63	+ 46·63
0    "    5	6,555	15	8,668	12	+ 2,113	+ 32·23	+ 31·63
5    "    10	913	110	1,190	84	+ 277	+ 30·34	+ 33·59
10   "   15	526	190	474	211	— 52	— 9·89	— 4·37
15   "   25	819	122	689	145	— 130	— 15·87	— 5·71
25   "   35	989	101	994	101	+ 5	+ 50	+ 10·54
35   "   45	1,245	80	1,582	63	+ 337	+ 29·43	+ 43·15
45   "   55	1,662	60	2,363	43	+ 701	+ 42·18	+ 53·49
55   "   65	2,962	34	4,309	23	+ 1,347	+ 45·48	+ 53·20
65   "   75	6,249	16	8,506	12	+ 2,257	+ 36·12	+ 38·89
75   "   85	13,797	7	17,321	6	+ 3,524	+ 25·54	+ 28·33
85   "   95	28,599	2	31,160	3	+ 2,561	+ 8·95	+ 7·92
95 and upwards	41,746	2	38,649	3	— 3,097	— 5·89	— 12·63
All ages ....	2,186	46	2,522	40	+ 335	+ 15·32	+ 20·57

This table exhibits some very interesting facts. It will be perceived that, for all ages, the mortality of the metropolis is upwards of

\* Calculated from the deaths in the seven years 1838 to 1845, from the Annual Reports of the Registrar-General.

15 per cent. (15·32) greater than that of England and Wales, males being about 21 per cent. (20·57). It also appears that the period of life most fatal in London is the first five years of existence. In the first year, the excess of mortality in the metropolis is 15 per cent. for both sexes; in the second, it rises to the enormous amount of 57; for males only, 59, or about three-fifths more than for England and Wales; during the second and third years, the conjoint mortality is not much less, being 49 per cent., or an increase of nearly a half more; in the third and fourth years, it is still higher, being 53; and between four and five years, it diminishes to 47 per cent.

In comparing the different rates of mortality shown in the above table, the question naturally presents itself to the mind, to what cause must be ascribed the great number of deaths during the first period of life, *i. e.* from 1 to 5 years of age? A variety of circumstances appear to contribute to this effect, *viz.*, the general impurity of the atmosphere, the quantity and quality of food and clothing, dentition, and the various diseases incidental to infancy.

Among these dentition holds a very prominent place; for though the proportion of deaths arising from this cause falls far short of those occurring from diarrhoea, hooping-cough, measles, and scarlatina; yet we cannot but be struck with the mortality as being greater than ought to exist from a natural process, the others being epidemics, and, consequently, less amenable to control.

During the succeeding quinquennial period, *viz.*, from 5 to 10, the mortality in London, though greater than England and Wales, is considerably less than the four preceding years, being 30 per cent. for both sexes, and 34 for males only—the increase being nearly one-third more for the metropolis. In the following five years, from 10 to 15, a remarkable change takes place, the respective ratios being reversed, London exhibiting 10 per cent. less than England and Wales. During the succeeding ten years the same feature presents itself, but a wider difference is observed between the conjoint mortality and that of males only, the former being 16 per cent. and the latter only 6.

It may be supposed by some that the great alteration in the rate of mortality of children in the metropolis between 10 and 15 years of age, arises from the circumstance that at this period of life many leave London for schools in the provinces, and, consequently, their deaths would not appear in the London returns of the Registrar-General. It must be borne in mind, however, that the census was taken prior to the period at which school-vacations usually occur, hence the returns would include such children only as were at that period, and are generally, residents of London.

After the age of 25 the mortality in the metropolis again increases until the period from 55 to 65, when it is 45 per cent. more than for England and Wales; subsequently to this it declines till the interval between 85 and 95, when it is 9 per cent. greater; from 95 to the remainder of life it shows the same features as from 10 to 25, only the case is reversed, the mortality for males and females being 6, and for males minus 13 per cent. Between 25 and 45, the period of child-bearing, the deaths among both sexes, conjointly, is less than among males only, and this is accounted for in the following manner by the Registrar-General.



“The chance of living from 25 to 45 is rather in favour of English women. The violent deaths of men on the rivers and the sea-coasts, in mines, in the streets, in travelling, in their dangerous occupations, the mental agitations and anxieties, terminating, unhappily, sometimes in suicide—the accumulation of workmen in ill-ventilated shops, or the hard exhausting work of the agricultural labourer, independently of war and service in unhealthy climates, counterbalance the dangers and sorrows of child-bearing.”

It might be, perhaps, as well here to state, that in comparing the mortality of London with England and Wales generally, the deaths in the latter include the heavy fatality experienced by all its cities and towns, together with the metropolis. Consequently these results do not show the comparative value of life for London and the country.

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In the present essay I have endeavoured to show the difference in mortality between the metropolis and England and Wales. In another I propose to point out the diseases principally concerned in producing this effect, and likewise the tendency of civilization to promote their increase.

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*On the Statistics of Places of Worship in England and Wales, founded on a Table compiled by the Rev. T. Blisse.* By REV. E. WYATT-EDGELL.

[Read before the Statistical Society of London, 15th December, 1851.]

THE object of this article is to show, first, the number of churches or chapels belonging to each denomination of Christians in England and Wales at the present time; and, secondly, how, in each denomination, they have increased during the last quarter of a century. The authorities from which it is compiled are the various Yearbooks, Manuals, Almanacs, and Magazines, of the different denominations of Protestants, the Roman Catholic Directory, and the evidence given by E. Baines, Esq., before the Church-rate Committee of the House of Commons in 1851.

I. It is computed that there are, in England and Wales, 28,290 churches and chapels, distributed amongst the various sects as follows:—

Denominations.	Churches or Chapels.	Per Cent.
1. The Established Church, which has....	14,000	49·49
2. The Presbyterians .....	150	·56
3. The Independents .....	2,572	9·09
4. The Baptists .....	1,943	6·87
5. The Wesleyan Connexion .....	4,450	15·73
6. The Wesleyan New Connexion .....	281	·99
7. The Primitive Methodists .....	1,662	5·87
8. The Wesleyan Methodist Association	322	1·10
9. Bible Christians .....	415	1·47
10. The Calvinistic Methodists .....	778	2·76
11. Lady Huntingdon's Connexion .....	30	·11
12. The Unitarians .....	260	·91
13. The Quakers .....	330	1·17
14. Various minor Protestant sects .....	500	1·77
15. Roman Catholics .....	597	2·11
	28,290	100·00

From the above table, it appears that the places of worship belonging to Protestants are 97·89 per cent., and those belonging to Roman Catholics 2·11 per cent. of the whole number; and that of the former a fraction more than half (viz. 50·55) belong to the Established Church, the rest to Protestant dissenters.

II. It is a gratifying fact, that among Christians of every denomination the numbers of the places of worship have considerably increased during the last quarter of a century. The ratios of their increase will be seen by the following table:—

		Increase per Cent.
In 1831, the Established Church had 11,825 churches and chapels; it has now 14,000; showing an increase of...	2,175	18·39
In 1831, the Independents had 1,840 chapels; they have now 2,572; showing an increase of .....	732	39·78
In 1831, the Baptists had 1,201 chapels; they have now 1,943; showing an increase of .....	742	61·77
In 1831, the various bodies of Methodists had 3,911; they have now 7,908; showing an increase of .....	3,997	102·19
Of the Roman Catholic chapels, the number in 1831 is not exactly known; they were in 1825, 375; they are now 597; showing an increase (in 26 years) of .....	222	59·20

The increase of the places of worship amongst the Presbyterians, Unitarians, Quakers and other minor sects, cannot be given, because the statistics are wanting in most of them previous to 1840. But as they have all much increased since the last-mentioned date, we cannot err in assigning to them the same average rate of increase which prevails among other Protestants, which is as follows:—

Increase of Protestant churches and chapels during 20 years, from 1831 to 1851 (exclusive of minor sects) .....	7,646, or 40·7 per cent.
Increase of Roman Catholic chapels in 26 years, from 1825 to 1851 .....	222, or 59·20 per cent.
Number of Protestant places of worship which have been built since 1831, as compared with the Roman Catholic places of worship which have been built since 1826 ....	34 to 1.

Besides the above-mentioned churches and chapels, which, as a matter of course, are exclusively devoted to purposes of Christian worship, it is computed by Mr. Baines that there are 7,474 “stations,” that is to say, schools or hired rooms, in which prayer-meetings are held and the gospel is preached by Evangelical Dissenters. The grounds for this computation, as well as for most of the figures contained in the first of the foregoing tables, may be seen in his evidence before the Church-rate Commission of 1851.

It must also be mentioned, that, of late years, the practice has become common for clergymen of the Church of England to read and explain the scriptures, and to join in prayer with their parishioners, on certain evenings of each week, at school-rooms, or, still more frequently, at cottages situated in hamlets remote from the parish church. But no statistics exist on which to ground even a conjecture as to the number of these services.



*Statistics of the North-West Provinces of British India.*

A VERY interesting document, recently presented to the Statistical Society by Colonel Sykes, gives a complete picture of the present state of statistical information in some of the principal provinces of the British empire in the East; and is very interesting as affording a living picture in contemporary history of their usual growth from the first rude use which is made of them by some barbarous governments, to that scientific character which their observations assume to fulfil the more beneficent behests of a civilized régime. It is a Memoir on the Statistics of the North-Western Provinces of the Bengal Presidency, compiled from official documents under orders of the Honourable the Lieutenant-Governor of the North-Western Provinces, by A. Shakespear, Esq., B.C.S., Assistant-Secretary to the Government, printed at Calcutta, in 1848. A table containing the undermentioned particulars respecting each of the thirty-one districts comprised in the five divisions into which the North-Western Provinces are distributed, was compiled as accurately as it was possible from the sources of information available at Agra; the columns of population having been filled up from different sources, sometimes from the revenue-surveyor's returns, sometimes from the statements in reports regarding education, or from Settlement Reports, or from new censuses taken subsequently to settlement, and separately reported by the collectors; all, however, subject to inaccuracies from carelessness or wilful concealment, as well as from the omission of existing "mouzabs" or townships, or the retention of others which ought properly to have been excluded. In one authority (the Revenue Survey) the adult male population alone was sometimes included while the entire population of large cities was excluded. The table thus compiled was transmitted, with a circular letter of instructions to the collectors of each district, for correction, by reference to the records and the best-informed subordinate officers in each; but "as any census based on the actual enumeration of the people would probably be vexatious and erroneous," it was deemed better to "test the population-returns by a rough estimate of the number of houses in each village, which may be ascertained from the Chowkeedar, Putwanee, or a person specially deputed for the purpose. The number of houses being thus ascertained, the number of persons actually resident in a certain number may be counted, and the average applied to the whole; the value of the result depending upon the care and discrimination with which this is done. All persons who derive their subsistence in whole or in part from the land, whether in the form of wages or rent, should be entered as cultivators, even though they may have other sources of income. The enumeration should take place in those houses or villages where the object of the process is most likely to be understood, and where the co-operation of the Zemindars and other influential inhabitants can be secured; distinct averages being assumed for different classes of population. Thus the average in cities and towns may be different from that in villages; the average in puckha houses from that in cutcha houses; in one pergunnah from another; in Mahommedan families from Hindoo, or Brahmin, or Rajpoot, or Chunar, or Parsee families." The returns of this nature given in by the Tuhseeldars

were then to be critically examined by the collector, with reference to the probable truth on the face of the return, and extraordinary divergencies from it to be subjected to further investigation; and, with regard to territorial measurements, it was always to be stated whether they had been according to the European scientific or the native 'khusrah' method. The spirit of the Government in making these investigations appears incidentally in very favourable relief in the cautions addressed to the collectors, the terms of which, as of the whole communication, were translated into Oordoo, and, with the rough statistical table, extensively circulated, in order that the native as well as the European officers of the Government might be fully apprised of the object in view.

*Revised Statistical Return of Area, Population, and Land Revenue, in the Six Districts of the North-Western Provinces (Delhi, Meerut, Rohilkund, Agra, Allahabad, and Benares), comprising Thirty-one Collectors' Districts, prepared in the Year 1848.*

1. Divisions .....	5
2. Districts .....	31
3. Number of mouzahs, or townships .....	80,883
4. Area in statute miles, British .....	71,985
5. Area in statute acres, British .....	46,070,658

*Malgoozaree, or Assessed Land.*

6. Cultivated acres .....	23,112,183
7. Cultivable acres .....	9,816,749

*Minhaee, or Unassessed Land.*

8. Lakhiraj acres .....	1,733,443
9. Barren acres .....	11,408,283
10. Demand on account of land revenue for 1846-7—rupees .....	4,05,29,921
11. Rate per acre on total area—rupees .....	0,14,1
12. Rate per acre on total malgoozaree—rupees .....	1,3,8
13. Rate per acre on total cultivation—rupees .....	1,12,1
14. Gross collections of land revenue in 1846-7—rupees .....	4,05,35,763
15. Charges of full revenue establishments in collectors' and district offices—rupees .....	26,17,264
16. Per centage of revenue charges on demand for 1846-7 .....	6,7,4
17. Net stamp collections, 1846-7—rupees .....	12,33,903
18. Net stamp abkaree collections, 1846-7—rupees .....	16,60,901

*Population.—Hindoos.*

19. Agricultural .....	13,127,956
20. Non-agricultural .....	6,324,690

*Mahommedans and others not Hindoo.*

21. Agricultural .....	1,596,277
22. Non-agricultural .....	2,150,745

*Total and Averages of Population.*

23. Total population .....	23,199,668
24. Number of persons to each square British statute mile .....	322.3
25. Number of statute British acres to each person .....	1.99

It will be seen at a glance to what an extent the earliest statistics of a country, as here exhibited, are purely administrative; and yet all the results are highly instructive; relating as they do to a population considerably more than that of Great Britain. There can be little



suspicion of excess in the population-returns, where an apprehension of coming taxes would tend so strongly rather to keep the returns under the true total, and yet here is a population as dense as that of the most thickly peopled parts of Europe, sustained on about four-sevenths of the soil, of which nearly one-half of the remainder is cultivable though yet uncultivated. Again, the Hindoo base of the population is equally obvious in its gross total of 19,452,646, and in the fact of two-thirds of it being attached to the soil; while of the remaining 3,747,022 Mahommedans and others, only three-sevenths are agricultural.

The density of the population in comparison with that of the principal states of Europe will appear from the following table, extracted from the report; and the future prospects of statistics in the North-West Provinces is well described in its concluding passages, which bear an evidence not the less gratifying because only incidental to the consolidation of internal peace and the growth of those ameliorations to which it is essential.

TABLE I.

COUNTRIES.	Population.	Area in Square British Statute Miles.	Average Population to Square Statute Mile.	Number of Acres to each Person.
Great Britain (Census of 1851) .....	18,535,786	83,827	221	2·89
England ditto .....	14,995,508	50,387	297	2·15
Ireland ditto .....	8,175,124	26,881	304	2·10
Scotland ditto .....	2,628,957	26,014	101	6·33
Wales ditto .....	911,321	7,426	123	5·21
France (exclusive of Corsica) ditto....	33,333,019	200,925	169	3·87
Prussia .....	14,154,198	110,170	128	4·98
Belgium .....	4,064,235	12,569	323	1·98
Russia in Europe (exclusive of Poland) .....	41,973,650	1,439,784	29	21·98
North-Western Provinces, 31 districts, 1847-48 .....	23,199,668	71,985	322	1·99

Notwithstanding the exertions that have been made to insure fidelity in these returns, it is evident from the preceding detail that they cannot be received as accurate. There is great reason to believe that they are still considerably below the truth. This presumption is strengthened by observing that the number of females is always reported to be much less than that of the males, whenever the sexes are distinguished. It is almost impossible that there should be such a difference as is often reported; and as it is not likely that the number of males is overrated, it is more than probable that the number of females is concealed.

Inquiries of this nature are still new in the country; the prejudices and apprehensions of the people have hitherto resisted their prosecution; but these prejudices have now given way.

*Remarks on the Abstract Tables of the Men Discharged from the Military Service of the East India Company.* By EDWARD BALFOUR, ESQ., Assistant Surgeon to the Right Honourable the Governor's Body Guard.

IN the five years from September 1842 to August 1847, inclusive, 2,419 of the Madras Native Army were discharged the service.

A cursory examination of the causes which led to their discharge shows that crime, disease, and natural physical unfitness, were the chief agencies in operation: we cannot, however, ascertain the exact share that each of these causes had; for, of the 2,419 individuals who have been in this manner removed from the strength of the army, 1,077, or nearly the half of them, were entered on the monthly discharge rolls, without any statement of the crime or cause which had led to their dismissal. Had this omission not been made, the records would have furnished a sufficient number of facts to admit of many more practical deductions than they now allow; but, even as they are, they furnish information of a nature calculated to assist us in the selection of recruits, the repression of crime, and the internal economy of the Army.

Although dismissal or discharge from the Service is more frequently had recourse to in the native army of India than amongst Her Majesty's soldiers, the military code admits of several other punishments. The Articles of War in force, when these rolls of discharged men were for the first time published, were brought into operation in the year 1827, and contained 82 articles, 43 of which specified crimes punishable by military courts, and the punishments which the latter could award. These punishments were death, corporal punishment, stoppage of pay and allowances, fines, dismissal, reduction and forfeiture of pension. Although this code continued in force until 1845, it was greatly altered by the General Orders of the Governor-General of 24th February, 1835, by which corporal punishment in the native armies was prohibited, and discharge from the service substituted for it; and it was still further altered by the Penal Act of 1839, sanctioning, along with their discharge from the service, imprisonment, with or without hard labour.

In this code of 1827 there were 15 articles specifying crimes for which military courts could award sentence of death; but as the chief punishment before 1835 was flogging, so discharge from the service and imprisonment with hard labour was the usual sentence after 1839.

On these articles being annulled by Act XX., 7th October, 1845, the code, then substituted, contained 154 articles, 91 of which related to crimes and their punishments; and the abolition of corporal punishment having been found to work very unsatisfactorily, it was by this Act again introduced, but in so greatly restricted a form, that even a general court-martial could only award 200 lashes, and these only for certain offences. Imprisonment with hard labour, which had become so common since 1839, was greatly restricted by this Act, it being permitted to be awarded only for the most disgraceful crimes; in 19 articles death or other punishment could be awarded, the remaining



articles admitting of imprisonment, simple or solitary, and with or without hard labour, and discharge.

The provisions in the articles of war of Act XX., 7th October, 1845, may be said to be still in force, but amended by the Act of 1st March, 1848, promulgating a new code, in which the principal alterations made consist in conferring increased power on commanding officers of regiments, making some articles more comprehensive, specifying some offences with more minuteness, changing slightly the mode of applying punishment and providing for three crimes, viz.: striking or forcing a sentry, refusing to work on field-works, and a sentry plundering property under his charge, which were not detailed in former codes. The code of 1st March, 1848, contains 158 articles, 96 of which specify crimes and their punishments, and, as in that of 1845, by 19 of its articles military courts can award the punishment of death; corporal punishment may still be awarded, but it is now restricted to 80 lashes, and it is understood to be the wish of Government that it be awarded only for certain offences, viz.: mutiny, violence to superiors, insubordination, drunkenness on duty and disgraceful conduct, and even for such offences to be as seldom as possible carried into effect.

In order to understand the frequency of dismissal and discharge, it must also be mentioned that it has always been in the power of the Governor-in-council and Commander-in-chief to substitute dismissal from the service for the punishments which courts-martial award; so that there are three modes by which men are removed from the service for crimes: some soldiers being discharged by sentence of courts-martial, some in consequence of having been sentenced by the courts-martial or the civil courts of the country to punishments which, from their degrading nature, rendered those on whom they were inflicted unworthy of remaining longer amongst soldiers, and some discharges are the punishments substituted or commuted by the superior authorities for those awarded by the military courts.

As the benefits and rewards of service should be commensurate with its punishments to allow the latter to exert their fullest influence, and with the view of exhibiting the extent of the punishment inflicted by discharging a soldier, it may be mentioned that the pay of the native armies of India, particularly those of Bengal and Bombay, is greatly above the amount earned by their relations or others of their own class of society employed in the occupations of civil life. This is the case even when the soldier first enlists, and his pay is afterwards, at stated periods, increased\*. Besides this every private soldier may obtain a commission, the native officers of the regular army, Jemadars and Subadars, rising exclusively from the ranks. They also receive medals when decreed to the army, and they are admitted into two military orders, viz.: the "Order of Merit," with the title of "Bahadour," into which the private, equally with the commissioned officer, may be admitted, and the "Order of British India," with the title of "Sirdar Bahadour," for native officers of distinguished services.

It will be seen from this that discharge from the service is a severe punishment, and in this light the native soldiers regard it.

\* The first increase takes place after 16, and the second increase after 20 years' service.

*Abstract Table showing the number of Hindoos, Mahomedans, and Christians, of the Madras Native Army, annually Discharged the Service; also the aggregate numbers of their Years of Age and Years of Service, and the Average of the same at the date of their Discharge.— For the five years 1842-43 to 1846-47, inclusive.*

	Total numbers in the five years from 1st September, 1842, to 31st August, 1847.				Aggregate Ages and Services in the five years from September, 1842, to 31st August, 1847.										Average Age. Period of Service.					
	Hindoos.	Mahomedans.	Christians.	Total.	Hindoos.		Mahomedans.		Christians.		Total.		Hindoos.		Mahomedans.		Christians.		Total.	
					Age.	Service.	Age.	Service.	Age.	Service.	Age.	Service.	Age.	Service.	Age.	Service.	Age.	Service.	Age.	Service.
Mutiny ..	6	31	...	37	Y. M. 156 0	Y. M. 45 4	Y. M. 962 0	Y. M. 434 0	Y. M. ...	Y. M. ...	Y. M. 1118 0	Y. M. 479 4	Y. M. ...	Y. M. 26 0	Y. M. 7 6	Y. M. 31 0	Y. M. 14 0	Y. M. ...	Y. M. 30 2	Y. M. 12 11
Violence to superiors .....	3	3	...	6	71 0	18 6	82 0	27 8	...	...	153 0	46 2	...	23 8	6 2	27 4	9 2	...	...	25 6
Disobedience of lawful command .....	16	6	1	23	411 0	112 0	141 0	34 5	28 0	8 5	580 0	154 10	...	25 8	7 0	23 6	5 8	28 0	8 5	25 2
Desertion .....	31	9	...	40	654 0	60 1	190 0	21 3	...	...	844 0	81 4	...	21 1	1 11	21 1	2 4	...	...	21 1
Drunkenness on duty .....	5	1	1	7	129 0	31 9	21 0	3 1	28 0	8 2	178 0	43 0	...	25 9	6 4	21 0	3 1	28 0	8 2	25 5
Gross insubordination in the ranks or before a court-martial .....	...	1	...	1	...	...	26 0	8 8	...	...	26 0	8 8	...	...	...	26 0	8 8	...	...	26 0
Breach of arrest or confinement .....	1	...	1	2	20 0	1 11	...	...	36 0	19 4	56 0	21 3	...	20 0	1 11	...	...	36 0	19 4	28 0
False statement or certificate to obtain pension .....	6	3	1	10	138 0	17 9	75 0	20 8	53 0	4 9	246 0	43 2	...	23 0	2 11	25 0	6 10	33 0	4 9	24 7
Malingering .....	7	6	...	13	170 0	37 9	170 0	62 4	...	...	340 0	100 1	...	24 3	5 4	28 4	10 4	...	...	26 1
Selling or injuring arms, &c. ....	1	1	1	3	23 0	3 11	19 0	1 8	21 0	4 5	63 0	10 0	...	23 0	3 11	19 0	1 8	21 0	4 5	21 0
Embezzlement .....	1	...	...	1	23 0	2 10	...	...	...	...	23 0	2 10	...	23 0	2 10	...	...	...	...	23 0
Disgraceful conduct .....	69	51	7	127	1701 0	378 0	1207 0	260 2	160 0	30 8	3068 0	668 10	...	24 7	5 5	23 8	5 11	22 10	4 4	24 1
Quitting or sleeping on post in time of peace .....	11	6	1	18	260 0	63 5	150 0	36 0	20 0	2 0	430 0	101 5	...	23 7	5 8	25 0	6 0	20 0	2 0	23 10
Accepting bribes to procure leave, promotion, &c. ....	1	1	...	2	23 0	3 10	25 0	5 9	...	...	48 0	9 7	...	23 0	3 10	25 0	5 9	...	...	24 0
Quitting guard or picket in time of peace .....	2	1	...	3	58 0	20 0	22 0	2 7	...	...	80 0	22 7	...	29 0	10 0	22 0	2 7	...	...	26 8
Absence from parade .....	1	2	2	5	23 0	3 6	51 0	10 11	44 0	3 9	118 0	18 2	...	23 0	3 6	25 6	5 5	22 0	1 10	23 7
Absence without leave, or overstaying leave .....	23	19	...	42	510 0	88 10	464 0	108 7	...	...	974 0	197 5	...	22 2	3 10	24 5	5 8	...	...	23 2
Absence from cantonment after hours .....	2	...	...	2	43 0	9 0	...	...	...	...	43 0	9 0	...	21 6	4 6	...	...	...	...	21 6
Wasting ammunition, &c. ....	...	...	1	1	...	...	...	...	25 0	8 3	25 0	8 3	...	...	...	...	...	25 0	8 3	25 0
Crimes not specified (to the prejudice of good order and military discipline) .....	151	130	39	320	3452 0	569 9	2930 6	468 0	891 0	189 4	7273 6	1227 1	...	22 10	3 9	22 6	3 7	22 10	4 10	22 8
Disease .....	215	103	20	338	5020 0	980 1	2322 9	432 11	415 6	84 1	7758 3	1497 1	...	23 4	4 6	22 6	4 2	20 9	4 2	22 11
Physical unfitness .....	112	69	50	231	2196 0	206 8	1359 0	122 11	898 0	95 3	4453 0	424 10	...	19 7	1 10	19 8	1 11	17 11	1 10	19 2
At his own request .....	55	45	10	110	1365 0	335 1	1057 0	232 8	228 0	48 0	2650 0	615 9	...	24 9	6 1	23 5	5 2	22 9	4 9	24 1
Crime or other cause of discharge not detailed .....	579	484	44	1077	13844 8	3058 10	10909 5	2539 6	1068 6	274 9	25822 7	5873 1	...	23 10	5 3	24 0	5 7	24 3	6 2	23 11
Total .....	1298	942	179	2419	30290 8	6048 10	22183 8	4833 9	3896 0	781 2	56370 4	11663 9	...	23 4	4 7	23 6	5 1	21 9	4 4	23 3



The code of 1845 and that of 1848 are both more minute in their specification of crime than the code of 1827; but from the nature of military service and the closeness of the links in the chain of discipline, a soldier committing himself generally infringes more than one article, and when attempting therefore to classify the offences which led to the discharge of these 2,419 Madras native soldiers, the graver crime has been the guide to the arrangement, as it doubtless had been to the sentence of the court-martial.

It will be seen from the table that of the 91 articles providing for crimes, in the code of the 7th October, 1845, it is only on 20, or less than the fourth part, that the discharges have been awarded, viz:—

Mutiny.	Disgraceful conduct.
Violence to superiors.	Quitting or sleeping on post in time of peace.
Disobedience of lawful command.	Accepting bribes to procure leave, &c.
Desertion.	Quitting guard or picquet in time of peace.
Drunkenness on Duty.	Absence from parade.
Gross insubordination in the ranks, or before a court-martial.	Absence without leave, or over-staying leave, &c.
Breach of arrest or confinement.	Absence from cantonment after hours.
False statement or certificate to obtain pension.	Selling, losing, or wasting ammunition.
Malingering.	Crimes not specified, to the prejudice of good order, &c.
Selling or injuring arms.	
Embezzlement.	

If it be established by further experience that these 20 classes of crime are of most frequent occurrence, the importance of directing considerable attention to their prevention or repression must be obvious.

Some of the above classes of crime were of more frequent occurrence than others, and it may be useful to allude to them individually.

*Mutiny.*—37 Native soldiers are recorded to have been discharged for mutiny in the 5 years, 6 of whom were Hindoos and 31 Mahomedans. In that period the average strength of the Madras native army was 74,300\*, from which it appears that the average annual number of discharged mutinous soldiers was only 7·4 in every 10,000.

It will be observed from the table that there were none discharged for mutiny in 1842-43, 1843-44, or in 1845-46; but that of the 37 individuals, 31 were dismissed in 1844-45, and 6 in 1846-47, and those who combined appear to have been all Hindoos or all Mahomedans.

From this irregularity of its appearance, it may be inferred that causes of mutiny are not in constant operation, or that the Madras native soldiers have not a mutinous disposition, but do occasionally band themselves together to obtain some specific object.

The Hindoos discharged for mutiny were on the average 26 years of age, and had served  $7\frac{1}{2}$  years.

The average age of the Mahomedans was 31 years, and their service 14 years. The mutineers were therefore men of full growth and above the average length of service; all of them, therefore, old soldiers, whose combinations must be regarded as a serious matter.

*Violence to Superiors.*—Only 6 men are mentioned as discharged

\* See Appendix, No. I.

the service for this offence, 3 Hindoos and 3 Mahomedans, most of them old soldiers, their average age being  $25\frac{1}{2}$  years, and their average service  $7\frac{1}{2}$  years.

*Disobedience of lawful command* led to the discharge of 23 men, 16 of whom were Hindoos, 6 Mahomedans, and only 1 Christian.

The average age of the discharged men was upwards of 25 years, and their service 6 years 8 months. This crime seems therefore to be an offence of the older soldiers.

*Desertion.*—Of the 40 soldiers discharged for deserting, 31 were Hindoos and 9 Mahomedans. This is evidently an offence of very young soldiers, for their average age was only 21 years and their service 2 years; and the Hindoos, the less military class of the Madras Presidency, have apparently deserted in somewhat greater numbers than the Mahomedans.

*Drunkenness on Duty* has not often occurred apparently, for only 7 cases of discharge are recorded from it, viz.: 5 Hindoos, 1 Mahomedan, and 1 Christian. This likewise seems to be a vice of the older soldiers, for the age of the offenders was, on the average, 25 years 5 months, and their average service 6 years and 1 month.

Only 1 man was discharged for gross insubordination in the ranks, and 2 for breach of arrest.

*False Statements or Certificates to obtain Pension* is a crime for which 10 men are recorded to have been discharged. Their average age was  $24\frac{1}{2}$  years.

*Malingering* led to the discharge of 13 men, 7 Hindoos and 6 Mahomedans, all of them of the older soldiers, their average age being 26 years, and service 7 years 8 months.

Three men were discharged for selling or injuring arms, and 1 for embezzlement.

*Disgraceful Conduct* led to the discharge of 127, of whom 69 were Hindoos, 51 Mahomedans, and 7 Christians. Nearly the whole of this number, viz.: 114, had committed theft, had robbed or been found with stolen property in their possession. If we assume  $28\frac{1}{2}$  years to be the average age and 10 years the average service of the Madras native army\* it would appear to be among the younger soldiers that disgraceful conduct occurs, for the average age of all those discharged was 24 years and their service 5 years.

*Quitting or Sleeping on Post in Time of Peace* led to the discharge of 18 soldiers; young men, their average age being 23 years 8 months, and service  $5\frac{1}{2}$  years.

Only 2 men accepted bribes and were discharged; 3 who quitted their guard; and 5 for absence from parade.

*For Absence without leave, or overstaying leave*, 42 discharges are mentioned, 23 Hindoos and 19 Mahomedans.

Young men apparently commit these offences, for those discharged were on the average 23 years of age, and had served only 4 years and 8 months.

Only 2 discharges are mentioned under the head of absence from cantonment after hours, both of them being young Hindoo soldiers; and 1 Christian of 8 years' service was discharged for wasting ammunition.

\* See Appendix, No. II.



Crimes not specified, but to the prejudice of good order and military discipline, led to the discharge of 320 soldiers, 151 of whom were Hindoos, 130 Mahomedans, and 39 Christians. There are 80 offences enumerated which these 320 soldiers had committed, but the most frequent were insubordinate conduct, for which 32 were dismissed; drunkenness 55; incorrigibly bad character 90; and discovered to have been discharged from another regiment previously 101; total 278, or six-sevenths of the whole of this class of *crime*; only the younger soldiers appear to commit themselves in this manner, for the average age of all dismissed was only 22 years and 8 months, with 3 years and 10 months' service.

Physical causes have occasioned the discharge of 569 soldiers, of whom 327 were Hindoos, 172 Mahomedans, and 70 Christians. Part of those numbers had evidently, however, been discharged for diseases which from their nature must have appeared in the course of the soldiers' service, and part of them on account of constitutional defects existing naturally. It will be useful, therefore, to examine the men discharged for physical causes under these two heads—

1. Discharged on account of Disease, viz.:

	215 Hindoos.	103 Mahomedans.	20 Christians.	338 Total.
	Yrs. Mths.	Yrs. Mths.	Yrs. Mths.	Yrs. Mths.
Whose average age at date of discharge .....	23 4	22 6	20 9	22 11
Whose average service at date of discharge .....	4 6	4 2	4 2	4 5
Whose average age when enter- tained .....	18 10	18 4	16 7	18 6

The average age of all discharged for disease was about 23 years, and after 4½ years' service.

II. Discharged on account of Physical Defects, viz:

	112 Hindoos.	69 Mahomedans.	50 Christians.	231 Total.
	Yrs. Mths.	Yrs. Mths.	Yrs. Mths.	Yrs. Mths.
Whose average age at date of discharge .....	19 7	19 8	17 11	19 2
Whose average service at date of discharge .....	1 10	1 11	1 10	1 10
Whose average age when enter- tained .....	17 9	17 9	16 1	17 4

The greater number of the Christians were discharged from inability to learn music, but the Hindoos and Mahomedans were mostly

discharged for imbecility, constitutional debility, and incapacity to learn their drill. It will be observed that the soldiers discharged for these causes were only 19 years of age on the average, and had served only 1 year and 10 months.

The cause of the discharge of 1077 soldiers is not detailed. The omission is to be regretted, as it prevents us determining the exact numbers discharged for each crime, &c.; but they seem to have been enlisted and again discharged at a like youthful age to that of the men whose crimes and physical ailments are recorded. Of the 1077 thus discharged, viz.:

	579 Hindoos.	454 Mahomedans.	44 Christians.	1,077 Total.
	Yrs. Mths.	Yrs. Mths.	Yrs. Mths.	Yrs. Mths.
Their average age at date of discharge .....	23 10	24 0	24 3	23 11
Their average service at date of discharge .....	5 3	5 7	6 2	5 5
Their average age when entered .....	18 7	18 5	18 1	18 6

These 1077 soldiers were discharged before they were 24 years of age, after only  $5\frac{1}{2}$  years' service.

Only 110 soldiers in 5 years, or 2 in 10,000 annually, received their discharge at their own request.

They had served  $5\frac{1}{2}$  years, and were 24 years on the average at the date of their discharge.

Altogether 663 soldiers are recorded to have been discharged for crimes, viz.:

	337 Hindoos.	271 Mahomedans.	55 Christians.	663 Total.
	Yrs. Mths.	Yrs. Mths.	Yrs. Mths.	Yrs. Mths.
Whose average age at date of discharge .....	23 0	24 1	23 4	23 7
Whose average service at date of discharge .....	4 5	5 6	4 6	4 10
Their average age when enlisted	18 7	18 7	18 10	18 9

It would, however, appear from these tables that some offences are committed by the older men, and others almost exclusively by the younger part of the army.



*Offences of the Older\* Soldiers.*

	Number Discharged.	Total Ages.		Total Service.	
		Yrs.	Mths.	Yrs.	Mths.
Mutiny .....	37	1,118	0	479	4
Violence to superiors .....	6	153	0	46	2
Disobedience of lawful command .....	23	580	0	154	10
Drunkenness on duty .....	7	178	0	53	0
Gross insubordination in the ranks or before a court-martial .....	1	26	0	8	8
Breach of arrest or confinement.....	2	56	0	21	3
Malingering.....	13	340	0	100	1
Wasting ammunition .....	1	25	0	8	3
Total .....	90	2,476	0	861	7
Average .....	....	27	6	9	6

*Offences of the Younger Soldiers.*

	Number Discharged.	Aggregate Ages.		Aggregate Services.	
		Yrs.	Mths.	Yrs.	Mths.
Desertion.....	40	844	0	81	4
False statement to obtain pension .....	10	246	0	43	2
Selling arms .....	3	63	0	10	0
Embezzlement .....	1	23	0	2	10
Disgraceful conduct: .....	127	3,068	0	668	10
Quitting or sleeping on post .....	18	430	0	101	5
Accepting bribes .....	2	48	0	9	7
Quitting guard or picquet in peace ....	3	80	0	22	7
Absence without leave .....	42	974	0	197	5
Absence from parade .....	5	118	0	18	2
Absence from cantonment after hours....	2	43	0	9	0
Crimes to prejudice of good order, &c.	320	7,273	6	1,227	1
Total .....	573	13,210	6	2,391	5
Average .....	....	23	0	4	2

It would appear from this that the more grave military crimes are committed by the older soldiers, but that few of them do actually commit themselves; the number of them discharged being only 90 out of 663, or a seventh part of the whole of those dismissed for recorded crimes.

The average age and service of all the 2,419 discharged men was as follows, viz. :—

	1,298 Hindoos.		942 Mahomedans.		179 Christians.		2,419 Total.	
Whose average age at date of discharge .....	Yrs.	Mths.	Yrs.	Mths.	Yrs.	Mths.	Yrs.	Mths.
Whose average service at date of discharge .....	23	4	23	6	21	9	23	3
Whose average age when enter- tained .....	4	7	5	1	4	4	4	9
Whose average age when enter- tained .....	18	9	18	5	17	5	18	6

\* By the term Older Soldier is meant a soldier above 5 years' service.

The average age of all the discharged men was under 24 years, and their average service 4 years and 9 months; they were therefore enlisted when only 18 years and 6 months old.

Military commanders and medical officers of armies have repeatedly objected to the entertainment of too young soldiers, and, in recent times, none have more strongly pointed out the inefficiency of this kind of troops and the great value of old soldiers than the Emperor Napoleon, and only last year his Grace the Duke of Wellington; and the same is inculcated in the writings of MM. Coche Kirkhoff, and Inspector-General Marshall. The chief objection which they have offered, however, has been the physical inability of young men to undergo the fatigues of field-service; but we observe from these tables that there are grave objections to their enlistment in a moral point of view, for in the five years from 1842-43 to 1846-47, while 569 were discharged for disease and physical unfitness, whose average age was 21 years and 5 months, and their service 3 years and 4 months, 663 men were discharged for crimes, whose ages only averaged 23 years and 7 months and their service 4 years and 10 months.

The diseased and physically unfit men had been entertained when 18 years of age, and were discharged again at the age of 21. But the soldiers have been discharged for crimes at a somewhat later period of life, having been enlisted when 18 years and 9 months old on the average, and discharged at the age of 23 years and 7 months; a difference of age of  $2\frac{1}{2}$  years.

The ages at which the greatest tendency to crime and to disease occurs amongst native soldiers may, however, be nearer each other than this, for while sickly men come immediately under notice (and the result of sickness being generally calculable), and diseased or broken men are at once got rid of, moral sickness, *i. e.*, the vices and crimes of young men, is considered more obscure, and a young soldier's first offences are gently dealt with, and his discharge is effected only after repeated admonitions and severe punishments have failed. And, therefore, although 21 years be the average age at which the native soldiers have been discharged for sickness, and 23 years 7 months the average age of those discharged for crimes, there may probably be a closer connection between mental and bodily sickness than these  $2\frac{1}{2}$  years of difference would evince.

As the greater part of the crimes seem to have been committed by young soldiers, and their crimes being of a nature which the thoughtlessness and excitability of youth and their weakness in resisting temptation would lead them to commit, it might be a question whether it would not be useful to keep the younger soldiers more constantly employed, and thereby exhaust that nervous energy the superabundance of which thrusts them into errors; to order, for instance, all soldiers under 5 years' service to more frequent exercises than those above it.

But as the whole of the 2,419 soldiers had been entertained when only 18 years and 6 months old, and were discharged before the age of 24, there need be no hesitation in asserting that the greater numbers of them were enlisted and again discharged before ever they were physically fit for the fatigues of field-service.

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## Lead and Lead Ore Exported from the United Kingdom in the Year ended 5th Jan., 1851.

Countries to which Exported.	British Lead and Lead Ore.																	
	Lead Ore.			Pig and Rolled Lead.			Shot.			Litharge.			Red Lead.			White Lead.		
	Tons c. q. lbs.	Tons c. q. lbs.	Tons c. q. lbs.	Tons c. q. lbs.	Tons c. q. lbs.	Tons c. q. lbs.	Tons c. q. lbs.	Tons c. q. lbs.	Tons c. q. lbs.	Tons c. q. lbs.	Tons c. q. lbs.	Tons c. q. lbs.	Tons c. q. lbs.	Tons c. q. lbs.	Tons c. q. lbs.	Tons c. q. lbs.	Tons c. q. lbs.	
Russia.....				3,774 13 0 12			0 4 2 26			139 19 3 23			19 7 2 12			17 17 2 14		
Sweden .....				115 19 3 14			.....			1 11 2 0			11 6 2 11			66 19 2 6		
Norway .....				36 6 0 4			17 0 1 22			3 15 2 15			7 8 0 10			85 15 1 3		
Denmark .....				200 18 3 0			38 12 1 20			22 15 2 19			25 12 0 15			167 2 2 1		
Prussia .....				41 13 0 27			.....			28 9 1 25			25 0 0 0			3 17 3 12		
Mecklenburg .....				7 3 1 7			12 4 3 0			27 10 3 0			0 15 0 0			17 11 0 0		
Hanover .....				.....			.....			0 2 0 0			1 10 0 0			2 18 3 7		
Oldenburg .....				.....			.....			.....			.....			9 0 0 0		
Hanseatic Towns .....	1 0 0 0			244 16 1 23			64 7 2 24			100 2 0 15			127 8 1 8			118 5 0 8		
Holland .....	30 4 0 0			145 17 1 11			0 3 0 0			29 5 1 8			303 19 0 6			4 16 2 5		
Belgium .....				237 7 0 14			1 0 0 0			18 7 0 27			80 13 2 4			0 9 1 10		
Channel Islands .....				85 14 2 3			15 2 3 2			.....			0 12 3 0			57 14 3 21		
France .....				2,837 10 1 8			.....			4 18 3 5			2 1 0 0			0 0 2 0		
Portugal, Azores, and Madeira .....				100 8 3 2			0 6 2 0			23 6 1 16			46 3 2 22			165 18 1 22		
Spain and Canaries ...				2 14 2 0			.....			5 9 2 0			19 8 2 24			21 16 3 18		
Gibraltar .....				3 12 2 10			1 19 0 0			0 8 1 24			6 10 0 0			1 10 0 22		
Italy .....	7 10 0 0			24 18 0 0			.....			109 0 1 0			80 9 3 5			4 2 3 21		
Malta .....	5 12 0 0			13 15 1 0			.....			.....			4 0 0 0			4 7 0 15		
Ionian Islands .....				3 3 0 0			0 17 0 0			.....			.....			4 14 0 0		
Greece.....				1 14 0 0			1 2 0 0			.....			1 2 0 0			1 1 0 0		
Turkey .....				228 4 2 25			8 19 0 0			3 5 0 0			14 10 0 0			20 3 0 0		
Wallachia and Mol- davia .....				9 15 0 0			.....			.....			0 2 0 0			1 0 0 0		
Syria and Palestine ...	18 11 0 0			35 10 1 9			0 10 0 0			.....			9 3 2 0			1 5 0 0		
Egypt .....	85 0 0 0			7 10 0 19			2 2 3 22			.....			2 5 0 0			3 0 0 0		
Morocco .....				.....			.....			.....			1 14 2 9			.....		
Western Coast of Africa .....				89 11 0 26			11 12 3 0			0 2 0 0			0 2 0 0			5 14 2 0		
British Possessions in South Africa .....				301 10 2 14			106 5 2 0			.....			16 16 2 0			35 19 3 4		
Ascension .....				.....			.....			.....			.....			0 5 0 0		
St. Helena.....				1 2 0 0			0 7 0 0			.....			0 2 0 0			3 10 3 21		
Mauritius .....				118 2 3 27			17 8 0 0			.....			1 8 0 22			3 9 0 0		
British Territories in the East Indies.....	18 0 0 0			2,927 5 0 10			356 12 1 13			10 4 0 0			1,162 19 0 19			232 1 1 26		
Java.....				24 0 0 0			10 10 0 0			.....			0 1 0 0			0 1 0 0		
Philippine Islands.....				.....			.....			.....			.....			0 1 2 0		
China (including Hong Kong) .....				1,164 3 0 11			3 19 2 0			.....			.....			5 17 1 8		
British Settlements in Australia .....				512 16 2 15			146 13 3 22			2 16 0 0			2 19 1 0			191 14 2 2		
British North Ameri- can Colonies .....				234 2 0 13			461 0 3 0			0 12 0 0			49 14 0 25			218 11 3 14		
British West Indies and British Guiana...				280 4 0 11			79 0 1 26			0 4 3 8			2 15 0 14			153 17 2 3		
Foreign West Indies...				39 4 2 24			32 9 2 10			0 15 0 0			11 15 3 0			3 19 3 6		
United States of Ame- rica .....				5,514 10 3 18			44 7 0 14			10 9 3 16			42 5 1 27			251 3 0 2		
Mexico .....				.....			.....			.....			.....			1 4 0 0		
Central America .....				4 0 0 0			1 7 0 0			.....			.....			1 0 0 0		
New Granada .....				12 10 0 14			14 7 1 2			5 0 0 0			0 4 0 0			0 4 0 0		
Venezuela .....				10 11 1 12			3 9 3 20			.....			.....			0 17 0 0		
Ecuador .....				5 11 0 6			4 9 0 0			.....			.....			.....		
Brazil .....				701 12 0 6			233 19 0 0			23 2 3 8			28 8 1 11			103 12 0 25		
Oriental Republic of the Uruguay .....				.....			6 8 0 0			0 2 0 0			0 11 0 0			.....		
Buenos Ayres .....				17 12 0 0			1 2 0 0			0 5 0 0			.....			15 16 0 0		
Chili .....				40 15 0 11			42 10 3 0			.....			0 19 2 0			32 19 0 24		
Peru .....				1 5 2 15			4 3 2 20			.....			0 5 3 16			0 5 0 0		
Falkland Islands .....				0 2 0 0			0 10 0 0			.....			.....			0 5 0 0		
Russian Settlements on the North-west Coast of America ...				5 19 0 0			3 4 0 0			.....			.....			.....		
Total Export .....	165 17 0 0			20,165 18 1 1			1,750 9 3 19			562 1 2 13			2,112 0 3 8			2,043 17 2 4		
Foreign Lead Exported	.....			3,217 12 1 25			.....			.....			2 1 2 14			19 18 1 27		
Gross Export.....	165 17 0 0			23,383 10 2 26			.....			.....			2,114 1 5 22			2,063 15 4 3		



## COPPER.

Copper Imported into the United Kingdom in the Year ended 5th January, 1851.

Countries from which Imported.	Ore.	Regulus.	Unwrought, in Bricks and Pigs, Rose Copper, and all Cast Copper.	Old, fit only for Re-manufacture, (including old Yellow Metal Sheathing).	Part Wrought; viz., Bars, Rods, or Ingots, hammered or raised.	Plates and Coin.	Copper Manufactures and Copper Plates Engraved. Value.
	Tons c. q. lbs.	Tons c. q. lbs.	Tns. c. q. lbs.	Tns. c. q. lbs.	Tons c. q. lbs.	Tons c. q. lbs.	£ s. d.
Russia .....	....	....	....	4 3 1 7	504 8 2 3	....	3 0 0
Sweden .....	....	....	....	....	0 6 0 0	0 1 0 0	2 10 0
Norway .....	....	....	0 19 3 13	0 0 2 21	146 17 0 7	....	....
Denmark .....	....	....	....	....	....	....	113 0 0
Ionian Islands .....	0 1 0 0	....	....	22 13 1 26	0 0 1 0	1 14 2 0	16,796 6 0
Holland .....	777 16 0 15	....	10 16 3 14	52 8 1 22	46 6 0 14	....	12,055 0 0
Belgium .....	0 7 2 5	....	....	....	1 6 0 25	....	2,819 0 0
Channel Islands ..	....	....	....	8 2 3 11	....	....	2 2 0
France .....	411 9 2 18	622 19 3 16	....	0 0 2 23	9 15 0 7	8 0 0 7	3,976 0 6
Spain .....	946 6 3 4	0 1 0 0	....	....	....	....	....
Italy .....	71 4 0 27	....	....	2 5 2 25	....	....	46 10 0
Turkish Dominions, including Syria and Egypt	18 13 1 3	404 7 3 15	....	72 4 1 5	....	0 1 0 14	....
Algeria .....	132 16 0 0	....	....	....	....	....	....
West Coast of Africa .....	33 4 3 11	....	....	3 16 0 1	2 10 3 13	....	2 5 0
British Possessions in S. Africa	157 0 3 21	....	....	14 12 1 1	....	....	....
Helena .....	....	....	....	11 14 3 17	....	....	....
British Territories in the East Indies .....	542 12 2 0	....	....	14 12 0 16	....	0 1 0 0	....
Canton (including Hong Kong) .....	....	....	....	1 18 0 8	....	....	76 10 0
South Australia ..	6,987 4 1 4	37 10 0 0	94 6 2 8	....	124 8 3 2	0 19 3 21	....
New South Wales	386 7 1 25	803 16 2 25	....	11 2 2 4	42 12 1 11	....	6 10 0
Victoria .....	482 14 0 2	....	1 9 0 12	....	....	....	....
San Diemen's L. ..	137 10 1 1	....	....	14 15 2 25	....	....	....
New Zealand .....	400 0 0 0	....	....	0 1 0 16	....	....	....
British N. American Colonies ..	0 3 0 11	....	....	0 17 3 0	....	0 0 0 24	30 0 0
British West Indies and British Guiana .....	4 18 2 14	....	....	5 1 3 19	....	....	....
Cuba .....	25,231 1 3 12	....	....	....	....	....	....
United States of America .....	44 1 0 0	46 1 0 5	304 4 0 9	179 8 3 19	....	....	15 10 0
Mexico .....	43 5 1 21	....	....	....	....	....	....
Central America ..	7 15 1 17	1 19 0 26	....	....	....	....	....
Buenos Ayres .....	....	....	....	....	23 5 3 0	....	....
Chili .....	2,250 16 3 1	3,312 14 1 24	242 9 3 23	2 0 0 0	3,084 16 1 3	....	....
Peru .....	1,319 10 3 7	244 2 0 27	15 0 0 20	1 16 0 20	225 1 0 19	....	....
Other Parts .....	1 4 0 0	....	....	7 18 1 25	....	1 0 1 10	2 10 0
Total Import ..	40,388 5 3 23	5,473 12 1 26	669 6 2 15	431 15 2 3	4,211 14 1 20	11 18 0 20	35,946 13 6
Quantities retained for Home Consumption ..	40,382 1 0 22	5,229 0 2 9	548 14 3 23	408 0 2 18	3,401 2 1 10	11 18 2 3	4,787 13 6
Net Amount of Duty received thereon .....	£ s. d. 2,019 10 3	£ s. d. 261 10 3	£ s. d. 92 15 9	£ s. d. 53 8 10	£ s. d. 429 18 5	£ s. d. 1 10 0	£ s. d. 479 15 3

## Copper Exported from the United Kingdom in the Year ended 5th January, 1851.

Countries to which Exported.	British Copper Ore.	British Copper.							Total of British Copper (exclusive of Ore).
		Unwrought, in Bricks, Pigs, &c.	Coin.	Sheets, Nails, &c. (including Mixed or Yellow Metal).	Wire.	Wrought Copper of Other Sorts.			
		Tons c. q.	Ts. c. q. lbs.	Tons c. q. lbs.	Ts. c. q. lbs.	Tns. c. q. lbs.	Tons c. q. lbs.		
Russia .....				2 4 3 26	0 7 1 8	0 4 0 20	2 16 1 26		
Sweden .....				88 0 1 18		0 3 0 0	88 3 1 18		
Norway .....		0 4 1 0		9 12 3 25		1 3 0 21	11 0 1 18		
Denmark .....		1 16 0 0		68 8 0 15	0 0 0 20		70 4 1 7		
Prussia .....		10 4 0 20		49 18 0 11	0 0 0 20	0 0 2 12	60 3 0 7		
Hanover .....				7 3 1 1		1 18 2 5	9 1 3 6		
Hanseatic Towns ...	150 0 0	71 0 2 4		757 1 2 7	6 7 2 17	36 4 2 17	870 14 1 17		
Holland .....		909 4 1 22		597 7 2 16	0 12 2 0	34 19 0 5	1,542 3 0 15		
Belgium .....		552 4 0 13		252 13 2 6	2 13 2 27	11 8 1 12	819 0 1 2		
Channel Islands .....		2 1 3 4		141 15 3 3	0 5 2 0	6 0 3 27	150 4 0 6		
France .....	0 10 0	4,566 18 1 16		69 13 2 23	0 1 1 13	13 5 1 9	4,649 18 3 5		
Portugal, Azores, and Madeira .....				157 16 1 3	0 1 1 10	5 9 0 7	163 6 2 20		
Spain and Canaries...				166 18 0 3	0 18 3 10	5 12 3 4	173 9 2 17		
Gibraltar .....		12 10 0 0		10 1 3 8		1 1 1 24	23 13 1 4		
Italy .....		387 3 1 24		688 7 1 0	0 0 2 4	18 11 0 21	1,094 2 1 21		
Malta .....		0 13 3 12		92 5 2 8		0 7 0 0	93 6 1 20		
Ionian Islands .....				0 8 3 15			0 8 3 15		
Greece .....				28 7 3 18	0 4 1 8		28 12 0 26		
Turkey .....				34 13 0 27	0 3 2 0	1 7 0 13	36 3 3 12		
Wallachia and Mol- davia .....				1 6 1 25			1 6 1 25		
Syria and Palestine...						1 6 2 0	1 6 2 0		
Egypt .....				175 16 2 17	0 0 1 22	2 0 1 20	177 17 2 3		
Morocco .....						0 4 2 0	0 4 2 0		
Western Coast of Africa .....				47 12 2 27	0 1 1 0	41 2 3 0	88 16 2 27		
British Possessions in South Africa .....				89 8 3 23	0 0 2 20	0 18 0 27	90 7 3 14		
St. Helena .....				0 4 3 2			0 4 3 2		
Cape Verde Islands...				0 0 0 19		0 0 2 12	0 0 3 3		
Mauritius .....				129 17 2 11	0 2 3 16	0 9 2 8	130 10 0 7		
British Territories in the East Indies ...		1,202 13 2 20	5 0 0 0	5,486 15 3 24	3 10 1 26	46 17 2 26	6,744 17 3 12		
Java .....				64 19 1 10		5 16 0 0	70 15 1 10		
Philippine Islands ...				51 12 3 20		0 14 0 0	52 6 3 20		
China (including Hong Kong) .....				34 19 3 14	0 7 3 0	0 5 0 0	35 12 2 14		
British Settlements in Australia .....			0 4 2 8	250 10 1 17	0 1 0 0	3 6 0 14	254 2 0 11		
British North Ameri- can Colonies .....		0 6 1 0		291 18 3 19	0 1 3 0	37 18 2 14	330 5 2 5		
British West Indies and British Guiana .....		0 0 0 15	0 10 1 14	104 2 0 8	0 9 0 17	54 19 1 26	160 1 0 24		
Foreign West Indies .....			1 13 1 5	286 2 1 26	0 10 0 0	11 5 1 16	299 11 0 19		
United States of Ame- rica .....		16 17 0 0		2,503 2 2 26	0 5 3 6	19 5 2 8	2,539 11 0 12		
Mexico .....				0 7 2 16			0 7 2 16		
Central America .....				1 6 3 11		8 15 2 0	10 2 1 11		
New Granada .....				6 18 2 17		2 7 1 13	9 6 0 2		
Venezuela .....				1 19 3 0	0 0 2 0	0 14 3 0	2 15 0 0		
Ecuador .....				5 13 0 22			5 13 0 22		
Brazil .....				359 3 2 22	0 1 1 20	15 9 0 9	374 14 0 23		
Oriental Republic of the Uruguay .....				0 14 2 9			0 14 2 9		
Buenos Ayres .....				0 16 2 19		2 1 2 4	2 18 0 23		
Chili .....				14 12 2 0	0 7 0 16	0 0 2 0	15 0 0 16		
Peru .....				17 2 3 21		4 6 2 18	21 9 2 11		
Total Export of } British Copper }	150 10 0	7,733 18 0 10	7 8 0 27	13150 7 2 8	17 17 1 0	398 2 1 20	21307 13 2 9		

Export of Foreign Copper ..... Tons c. q. lbs. £ s. d.  
 1,013 6 3 24  
 „ „ Manufactures and Copper Plates Engraved. Value ..... 31,159 0 0



## TIN.

*Tin Imported into the United Kingdom in the Year ended 5th January, 1851.*

Countries from which Imported.	Quantity.	Countries from which Exported.	Quantity.
	Tons. c. q. lbs.		Tons. c. q. lbs.
Hanseatic Towns .....	6 4 0 22	Victoria (Port Philip) .....	9 9 3 21
Holland .....	433 17 1 2	United States of America....	79 0 2 10
Belgium .....	4 12 0 25	Chili .....	2 13 1 17
France .....	12 10 1 15	Peru .....	20 0 0 7
Portugal.....	.....		
Spain .....	115 4 0 4	Total Import.....	1,685 11 1 0
Mauritius .....	1 12 3 7		
British Territories in the East } Indies, exclusive of Singa- } pore and Ceylon .....	347 13 2 8	Quantities retained for } Home Consumption }	1,088 7 0 21
Singapore .....	636 19 1 18		
China, including Hong Kong	15 13 1 12	Net Amount of Duty } received thereon .... }	£ 5,827 s. 3 d. 3

*Tin Exported from the United Kingdom in the Year ended 5th January, 1851.*

Countries to which Exported.	Quantity.	Countries to which Exported.	Quantity.
	Tons. c. q. lbs.		Tons. c. q. lbs.
Russia .....	471 10 0 26	British Territories in the } East Indies .....	1 17 2 24
Sweden .....	13 17 1 2	British Settlements in Aus- } tralia .....	12 10 3 5
Norway .....	3 3 0 13	British Northern Colonies...	11 5 1 7
Denmark .....	2 6 2 14	British West Indies and } British Guiana .....	6 10 2 18
Prussia .....	6 15 1 9	Foreign West Indies.....	8 3 2 0
Mecklenburg.....	0 2 2 0	United States of America....	32 13 0 9
Hanseatic Towns .....	32 14 1 2	Mexico .....	0 5 2 0
Holland .....	53 18 2 18	New Granada .....	0 15 2 0
Belgium.....	15 14 2 26	Venezuela .....	0 7 2 20
Channel Islands .....	4 19 1 8	Ecuador.....	1 18 2 19
France .....	416 13 1 12	Brazil.....	24 11 2 22
Portugal, Azores, and Madeira	15 17 0 0	Oriental Republic of the } Uruguay .....	0 12 0 0
Spain and Canaries .....	40 12 0 11	Buenos Ayres .....	6 8 1 4
Gibraltar .....	1 5 0 0	Chili .....	1 0 0 0
Italy .....	40 2 3 13	Peru .....	0 2 0 0
Malta.....	4 1 0 0	Russian Settlements on the } North-West Coast of } America .....	0 8 2 0
Ionian Islands .....	9 12 0 0		
Greece .....	18 12 0 0	Total Export of British Tin	1,588 1 2 17
Turkey .....	240 4 2 15	Total Export of Foreign Tin	189 15 0 14
Wallachia and Moldavia .....	26 4 0 0		
Syria and Palestine .....	42 8 3 0	Gross Export.....	1,777 16 3 3
Egypt .....	1 12 0 0		
Morocco .....	9 0 0 0		
Western Coast of Africa .....	3 10 0 0		
British Possessions in South } Africa .....	3 14 0 0		
Mauritius .....	.....		

## ZINC.

*Zinc and Zinc Ore Imported into the United Kingdom in the Year ended 5th Jan., 1851.*

Countries from which Imported.	Zinc or Spelter.			Oxide of Zinc.		
	Tons.	c.	q. lbs.	Tons.	c.	q. lbs.
Denmark.....	253	12	2 22	.....		
Prussia.....	7,235	12	0 22	.....		
Hanseatic Towns .....	7,811	17	3 3	0	9	2 22
Holland .....	182	16	1 1	6	15	0 12
Belgium .....	2,909	10	3 22	124	8	1 16
France .....	209	3	2 12	39	3	1 15
Italy .....	22	13	1 10	.....		
British North America .....	0	19	2 24	.....		
United States of America.....	0	0	0 8	.....		
Total Import (Duty free).....	18,626	6	2 12	170	16	2 9

*Zinc and Zinc Ore Exported from the United Kingdom in the Year ended 5th Jan., 1851.*

Countries to which Exported.	Zinc or Spelter.					
	British.			Foreign.		
	Tons.	c.	q. lbs.	Tons.	c.	q. lbs.
Russia.....	224	0	0 0	.....		
Sweden .....	0	5	0 0	2	0	0 0
Norway .....	0	16	2 22	.....		
Denmark.....	1	5	0 8	1	10	0 0
Hanover .....	2	15	0 0	.....		
Hanseatic Towns .....	47	8	2 25	.....		
Holland .....	7	0	3 27	20	0	0 0
Belgium .....	2	10	3 6	1	0	0 0
Channel Islands.....	14	3	3 26	4	5	0 0
France.....	0	3	2 0	63	0	0 0
Portugal, Azores, and Madeira.....	6	5	3 17	1	3	0 0
Spain and Canaries .....	2	3	0 27	0	10	0 0
Gibraltar.....	1	4	0 0	0	10	0 0
Italy .....	24	7	1 7	1	0	0 0
Malta .....	4	18	0 0	.....		
Ionian Islands .....	0	3	0 0	.....		
Turkey .....	31	5	2 7	32	10	0 0
Wallachia and Moldavia .....	23	10	0 0	.....		
Egypt .....	0	6	2 0	.....		
Morocco .....	1	0	0 17	.....		
Western Coast of Africa .....	1	2	1 0	.....		
British Possessions in South Africa .....	79	2	1 27	.....		
St. Helena.....	0	2	3 24	.....		
Mauritius .....	0	5	0 0	.....		
British Territories in the East Indies .....	201	0	1 16	3,011	12	0 9
Java .....	19	0	0 0	29	19	2 3
British Settlements in Australia .....	79	14	2 14	4	18	0 0
British North American Colonies .....	50	7	0 24	20	5	0 0
British West Indies and British Guiana.....	13	8	1 3	0	8	0 0
Foreign West Indies .....	38	10	2 23	.....		
United States of America .....	215	9	3 9	213	12	1 7
Mexico .....	2	5	1 16	.....		
New Granada .....	0	10	0 16	2	0	0 0
Venezuela .....	0	4	0 0	.....		
Ecuador .....	0	6	0 0	.....		
Brazil .....	8	12	3 0	5	4	0 0
Oriental Republic of the Uruguay .....	0	17	0 0	.....		
Buenos Ayres.....	31	17	2 8	7	4	3 16
Chili .....	11	2	3 0	.....		
Peru .....	1	18	0 1	.....		
Russian Settlements on the North-West Coast of America .....	0	7	1 0	.....		
Total Export.....	1,151	18	0 6	3,422	11	3 7



*Twenty-first Meeting of the British Association for the Advancement of Science, held at Ipswich, 2nd—8th July, 1851. Section F. Statistics.*

THE Rev. E. W. Edgell, Mr. Tooke, and Mr. Danson, were appointed Delegates to the Meeting to represent the Council of this Society.

The following were its Officers and Committee:—

*President.*—Sir J. P. Boileau, Bart.

*Vice-Presidents.*—The Mayor of Norwich, The Right Hon. Lord Monteagle; Sir C. Lemon, Bart., M.P., F.R.S., James Heywood, Esq., M.P., F.R.S.

*Secretaries.*—Professor Hancock, Joseph Fletcher, Esq.

*Committee.*—Mr. H. Adair, Professor Allman, The Rev. E. W. Edgell, Professor E. D. Friedlaender, J. W. Gilbert, Esq., T. S. Gowing, Esq., T. Hancock, Esq., Dr. T. Hodgkin, W. Jerdan, Esq., Captain T. J. Lewis, The Right Reverend The Bishop of Oxford, Algernon Peckover, Esq., Mark Philips, Esq., Lieut.-Col. Portlock, Lieut.-Col. Sykes, Richard Taylor, Esq., The Rev. W. Whewell, D.D.

The following were the contributions submitted to the Section:—

1. An Investigation into the Question, is there really a want of Capital in Ireland? By Professor Hancock.
2. On the Duties of the Public in respect to Charitable Savings Banks. By Professor Hancock.
3. Statistics of the Attendance in Schools for Children of the Poorer Classes. By Joseph Fletcher, Esq.
4. On the Mathematical Exposition of some Doctrines of Political Economy. By The Rev. Dr. Whewell.
5. Observations on eighteen shaded Maps and coloured Diagrams of the Criminal Statistics of England and Wales during Sixteen Years.
6. Comparison between the Results exhibited in these Tables and those presented in the Moral Statistics of England and Wales, by Joseph Fletcher, Esq. By the author of the latter.
7. Should Boards of Guardians endeavour to make Pauper-labour Self-supporting, or should they investigate the causes of Pauperism?
8. On the Mortality in different sections of the Metropolis during the Epidemic of Cholera in 1849.
9. On the Best Means of ascertaining the Number and Condition of the Infantile Idiots in the United Kingdom. By Dr. F. T. Tilt.
10. On the Influence of Discoveries in Science and Works of Art in Developing the Condition of a People, indicated by the Census Operations of the United States. By J. C. G. Kennedy, Esq., Director of Statistics at Washington.
11. On the Prospects of the Beet Sugar Manufacture of the United Kingdom. By Professor Hancock.

The next Meeting of the Association will be held at Belfast.

# PROCEEDINGS OF THE STATISTICAL SOCIETY OF LONDON.

SESSION 1851-2.

*First Ordinary Meeting. Monday, 17th November, 1851.*

Lieut.-Colonel W. H. Sykes, Vice-President, in the Chair.

The following Gentlemen were elected Fellows:—

William Barton Ford, Esq.		William Pollard Urquhart, Esq.
Alexander Robertson, Esq.		

A Paper on the Duration of Life among the Clergy was read by Dr. Guy.

A Statistical Chart of the Principal Commercial Countries of the World was briefly noticed by the Author, Leone Levi, Esq.

Mr. Fletcher brought before the notice of the Meeting a list of the Papers read at the Statistical Section of the British Association at Ipswich in 1851.

*Second Ordinary Meeting. Monday, 15th December, 1851.*

Lieut.-Colonel W. H. Sykes, Vice-President, in the Chair.

The following Gentlemen were elected Fellows:—

Sir William Fowle Fowle Middleton, Bt.		Sir W. C. Trevelyan, Bart.
J. Pollard Willoughby, Esq.		Robert Tucker, Esq.
Leone Levi, Esq.		John Hornby, Esq.
Henry William Porter, Esq.		Thos. Beggs, Esq.
W. Meredith Browne, Esq.		W. Henry Smith, Esq.
Edward Cheshire, Esq.		Capt. R. Guthrie MacGregor.
John Jennings, Esq.		Charles Jellicoe, Esq.

The following Papers were read:—

Statistics of Places of Worship in England and Wales. By the Rev. Thos. Blisse, edited by the Rev. E. W. Edgell.

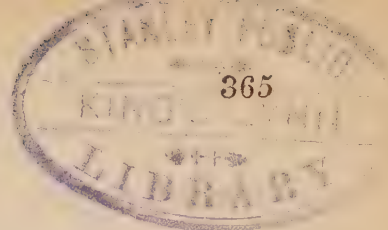
Comparative Statistics, and an attempt at a Universal Commercial Code. By Leone Levi, Esq.

## MISCELLANEOUS.

### *Foreign and Colonial Spirits.*

	Quantities remaining in Warehouse under Bond in Great Britain and Ireland at the commencement of each Year.	Quantities taken out of Bond for Home Consumption in Great Britain and Ireland in each Year.	Deficiencies allowed on the Quantities taken out of Bond for Home Consumption.
	Gallons.	Gallons.	Gallons.
Year commencing 5th January, 1845, } and ending 5th January, 1846 ... }	5,324,362	3,541,545	123,668
Year commencing 5th January, 1846, } and ending 5th January, 1847 ... }	5,890,949	4,235,086	186,925
Year commencing 5th January, 1847, } and ending 5th January, 1848 ... }	5,291,400	4,893,624	145,456
Year commencing 5th January, 1848, } and ending 5th January, 1849 ... }	6,515,116	4,619,346	141,479
Year commencing 5th January, 1849, } and ending 5th January, 1850 ... }	7,934,658	5,253,611	150,525





*A Return of the Number of Acres of Land under Cultivation for Hops, and the Amount of Duty charged in each Collection, in each of the three Years 1848, 1849, 1850, showing whether the Acres returned in the Sussex, Hereford, or Worcester Collections are according to Statute, or any local or customary Admeasurement.*

COLLECTIONS.	1848.			1849.			1850.		
	Number of Acres.	Amount of Duty Charged.	Average Amount of Duty per Acre.	Number of Acres.	Amount of Duty Charged.	Average Amount of Duty per Acre.	Number of Acres.	Amount of Duty Charged.	Average Amount of Duty per Acre.
		£	£ s. d.		£	£ s. d.		£	£ s. d.
Barnstaple.....	22	139	6 8 2	22	10	0 9 1	11	49	4 9 1
Bath .....	..	..	..	..	..	..	..	..	..
Bedford .....	4	13	3 5 0	..	..	..	..	..	..
Bristol .....	4	..	..	4	..	..	4	..	..
Cambridge ....	6	43	7 3 4	6	..	..	6	31	5 2 4
Canterbury ....	9,777	78,157	7 19 1	8,272	27,189	3 5 8	8,345	85,932	10 5 11
Chester .....	..	..	..	..	..	..	..	..	..
Cornwall .....	2	2	1 0 0	2	2	1 0 0	2	3	1 10 0
Derby .....	46	269	5 16 11	17	10	0 11 9	25	100	4 0 0
Dorset .....	..	..	..	..	..	..	..	..	..
Essex.....	182	1,059	5 16 4	140	35	0 5 0	161	824	5 2 4
Exeter .....	..	..	..	..	..	..	..	..	..
Gloucester .....	19	118	6 4 2	19	5	0 5 0	18	113	6 5 6
Grantham .....	12	62	5 3 4	16	4	0 5 0	17	56	3 6 0
Hants .....	1,713	15,274	8 18 4	1,608	6,613	4 2 3	1,624	18,894	11 12 8
Hereford .....	6,304	22,316	3 10 9	5,264	11,345	2 3 1	5,125	26,771	5 4 5
Hertford .....	1	2	2 0 0	..	..	..	1	1	1 0 0
Isle of Wight ..	1,143	8,117	7 2 0	1,051	2,510	2 7 9	1,110	11,276	10 3 2
Lincoln .....	303	1,822	6 0 3	244	254	1 0 9	260	1,137	4 7 5
Lynn .....	6	..	..	..	..	..	..	..	..
Northampton....	..	..	..	..	..	..	..	..	..
Norwich .....	..	..	..	..	..	..	..	..	..
Oxford .....	8	20	2 10 0	1	..	..	..	..	..
Plymouth .....	..	..	..	..	..	..	..	..	..
Reading.....	7	69	9 17 1	7	..	..	6	55	9 3 4
Rochester .....	16,286	134,112	8 4 8	14,576	59,457	4 1 4	15,168	153,877	10 2 10
Salisbury .....	19	27	1 8 5	5	..	..	5	10	2 0 0
Salop .....	6	12	2 0 0	3	..	..	3	6	2 0 0
Stourbridge ....	337	1,395	4 2 9	299	653	2 3 7	294	1,737	5 18 2
Suffolk .....	160	915	5 14 4	133	351	2 12 9	146	932	6 8 0
Surrey .....	23	139	6 0 10	20	..	..	27	158	5 17 0
Sussex .....	11,593	117,472	10 2 7	10,006	35,251	3 10 5	9,718	115,563	11 17 7
Uxbridge .....	..	..	..	..	..	..	..	..	..
Wales, Middle ..	29	83	2 19 3	22	1	0 0 10	18	88	4 17 9
Wellington .....	..	..	..	..	..	..	..	..	..
Worcester .....	1,220	6,370	5 4 3	1,061	2,003	1 17 9	1,031	7,086	6 17 5
Total .....	49,232	388,007	7 17 0	42,798	145,693	3 8 0	43,125	424,699	9 17 0

*Note.*—In the above account, the number of Acres returned for Sussex, Hereford, and all the other Collections, are statute acres, with the exception of Worcester, in which case about one-fourth part are termed hop acres, comprising a portion of land capable of containing 1,000 hop plants placed in rows, six or seven feet apart, and equal, upon an average, to about two-thirds of the statute acre.

AN ACCOUNT of the Number of Quarters of Corn, together with the Number of Cwts. of Meal converted into Quarters, which have been Imported from Foreign Countries in each Month, from the 5th day of January, 1850, to the 5th day of January, 1851; distinguishing the Countries from which Imported.

*Corn, Grain, Meal, and Flour, stated in Quarters of Grain, Imported into the United Kingdom in each Month in the Year 1850.*

Months.	Wheat and Wheat Flour.	Barley and Barley Meal.	Oats and Oatmeal.	Rye and Rye Meal.	Peas and Pea Meal.	Beans and Bean Meal.	Indian Corn and Meal.	Buck Wheat and Buck Wheat Meal.	Beer or Bigg.	Aggregate of all Sorts.
	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.
January .....	212,357	39,985	26,020	1,815	6,289	30,911	52,981	3	...	370,361
February .....	187,318	7,267	3,307	1,219	2,881	28,945	101,665	31	...	332,633
March .....	256,182	70,858	100,987	4,731	9,543	46,802	132,698	6	...	621,807
April .....	396,381	129,846	218,235	11,431	11,915	58,230	212,748	1	...	1,038,787
May .....	378,349	129,606	114,597	26,809	16,829	38,452	146,337	51	...	851,030
June.....	463,580	118,404	107,333	24,362	18,472	31,181	171,177	...	...	934,509
July .....	544,589	177,189	204,265	17,536	26,487	42,980	159,558	47	571	1,173,222
August.....	394,301	100,808	127,204	3,215	13,103	19,737	80,696	...	...	739,064
September .....	596,896	95,437	130,858	3,110	11,032	37,436	101,863	53	...	976,685
October .....	479,401	57,380	72,038	101	20,703	31,757	36,413	30	...	697,823
November .....	458,817	68,256	43,156	3	29,257	45,641	46,991	4	...	692,125
December .....	487,868	48,046	21,811	1	14,927	31,234	46,462	98	...	650,447
Total.....	4,856,039	1,043,082	1,169,811	94,333	181,438	443,306	1,289,589	324	571	9,078,493



Countries from which Imported.	Wheat and Wheat Flour.	Barley and Barley Meal.	Oats and Oatmeal.	Rye and Rye Meal.	Peas and Pea Meal.	Beans and Bean Meal.	Indian Corn and Meal.	Buck Wheat and Buck Wheat Meal.	Beer or Bigg.	Aggregate of All Sorts.
	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.
Russia, Northern Ports.....	70,189	12,345	279,087	848	3,915	...	...	2	...	366,386
— Ports within the Black Sea .....	572,446	...	...	...	...	...	19,739	...	...	592,185
Sweden.....	354	93	138,648	...	582	8	...	...	...	139,685
Norway.....	2	327	496	...	...	...	...	...	...	825
Denmark Proper, and Duchies of Sleswig and Holstein .....	162,874	559,470	277,484	13,123	58,113	13,757	250	...	571	1,085,642
Prussia.....	837,826	270,242	89,322	57,076	79,965	16,385	...	...	...	1,350,816
Mecklenburg Schwerin .....	125,748	18,002	500	5,061	5,678	...	...	...	...	149,928
Hanover .....	29,617	3,070	155,685	1,269	1,097	44,379	...	25	...	238,035
Oldenburg and Kniphausen.....	4,011	3,055	45,713	3,372	1,378	18,311	...	...	...	73,456
Hanseatic Towns .....	223,381	117,708	13,718	37	14,650	22,203	...	121	...	395,153
Holland .....	294,483	1,906	161,692	1	1,378	38,825	...	38	...	498,359
Belgium .....	208,479	...	655	1	5	7,863	...	21	...	212,024
Channel Islands (Foreign Produce) .....	2,111	...	58	199	94	...	1,492	...	...	3,860
France .....	1,150,899	33,017	2,992	7,933	...	36,748	103,609	103	...	1,335,395
Portugal Proper .....	30	...	63	2,026	...	1	67,787	...	...	69,907
— The Azores .....	...	...	...	...	...	...	7,794	...	...	7,794
Spain, Continental and Balearic Islands .....	2,184	...	...	...	...	6	20,101	...	...	22,295
Italy and the Italian Islands, viz.:—										
Sardinian Territories .....	1,536	...	...	...	...	...	25	...	...	1,561
Duchy of Tuscany .....	42,635	1	...	...	...	20	15,962	...	...	58,618
Papal Territories.....	7,990	...	...	...	...	...	1,876	...	...	9,866
Naples and Sicily .....	25,511	...	...	...	...	5,505	10,086	...	...	41,102
Austrian Territories .....	39,950	3,907	...	886	...	9,399	45,800	...	...	99,942
Malta and Gozo .....	10,969	1,372	...	...	...	866	4,971	...	...	18,178
The Ionian Islands .....	...	...	...	...	...	...	7,397	...	...	7,397
Kingdom of Greece .....	6,306	...	...	...	...	...	8,749	...	...	15,055
Turkish Dominions, exclusive of Wallachia, } Moldavia, Syria, Palestine, and Egypt ... }	52,421	6,395	...	...	...	...	198,422	...	...	257,238
Wallachia and Moldavia .....	70,459	...	...	2,454	...	...	145,838	...	...	218,751
Syria and Palestine .....	13,212	1,331	...	...	...	...	7,579	...	...	22,122
Egypt, Ports on the Mediterranean .....	248,363	10,840	...	...	1,153	228,771	71,987	...	...	561,114
British Possessions on the Gold Coast .....	...	...	...	...	...	220	2,398	...	...	2,618
British Territories in India .....	689	...	...	...	6	...	...	...	...	695
British Settlements in Australia .....	14,943	1	...	...	...	...	1,530	...	...	14,944
British North America .....	80,710	...	311	...	13,638	...	545,461	...	...	96,191
United States of America .....	542,930	...	3,384	247	760	35	262	...	...	1,092,829
New Granada .....	...	...	...	...	...	...	470	...	...	262
Brazil .....	1	...	...	...	...	...	...	...	...	471
Buenos Ayres or Argentine Republic.....	3,799	...	...	...	...	...	...	...	...	3,801
Chili .....	13,951	...	...	...	...	...	...	...	...	13,951
Other parts .....	30	...	3	...	...	4	...	...	...	42
Total.....	4,856,039	1,043,082	1,169,811	94,333	181,438	443,306	1,289,589	324	571	9,078,493

*An Account of the Gross and Net Receipt of the Duties of Excise in the Year 1850.*

	Gross Receipt.	Net Receipt.		Gross Receipt.	Net Receipt.
<i>England.</i>	£	£	<i>Ireland.</i>	£	£
Hops .....	309,444	307,077	Game Certificates ....	9,670	9,670
Licenses .....	917,805	917,632	Licenses.....	100,800	100,776
Malt.....	4,776,653	4,729,610	Malt .....	231,956	230,950
Paper .....	686,089	632,131	Paper.....	43,816	43,755
Post-Horse Duty ....	125,171	125,160	Post-Horse Licenses	3,048	3,048
Ditto Licenses.....	4,477	4,477	Spirits, home made	1,103,247	1,100,572
Soap.....	1,170,210	941,191			
Spirits, British .....	2,976,674	2,953,000	Total.....	1,492,537	1,488,771
	10,966,523	10,610,278			
			<i>United Kingdom.</i>	£	£
Railways .....	229,448	229,448	Game Certificates ....	9,670	9,670
Stage Carriages .....	181,766	181,731	Hops .....	309,444	307,077
Hackney ditto.....	79,208	79,208	Licenses.....	1,130,864	1,130,175
Bricks .....	26,455	....	Malt .....	5,645,490	5,391,322
			Paper.....	915,121	852,996
Total.....	11,483,400	11,100,665	Post-Horse Duty ....	142,038	142,027
			Ditto Licenses .....	7,983	7,983
<i>Scotland.</i>	£	£	Soap .....	1,309,740	1,065,571
Licenses .....	112,259	111,767	Spirits .....	5,944,182	5,909,383
Malt.....	636,881	430,762		15,414,532	14,816,204
Paper .....	185,216	177,110			
Post-Horse Duty.....	16,867	16,867	Railways .....	251,215	251,215
Ditto Licenses.....	458	458	Stage Carriages.....	195,074	195,580
Soap.....	139,530	124,380	Hackney ditto .....	79,208	79,208
Spirits, home made....	1,864,261	1,855,811	Bricks .....	27,883	....
	2,955,472	2,717,155			
			Total.....	15,968,512	15,342,207
Railways .....	21,767	21,767			
Stage Carriages .....	13,908	13,849			
Bricks .....	1,428	....			
Total.....	2,992,575	2,752,771			

Brick Duty repealed from 16th March, 1850.

Sugar Duty reduced from 14s. per cwt. to 11s. per cwt., from 14th August, 1850.

*An Account of the Quantity in Pounds of Linen Yarn Exported from the United Kingdom into France, during each of the last Twenty Years.*

Year.	British Linen Yarn Exported from the United Kingdom to France.	Year.	British Linen Yarn Exported from the United Kingdom to France.	Year.	British Linen Yarn Exported from the United Kingdom to France.
	lbs.		lbs.		lbs.
1831.....	17,503	1838.....	11,485,680	1845.....	9,153,188
1832.....	76,512	1839.....	12,259,254	1846.....	5,806,568
1833.....	867,288	1840.....	13,137,367	1847.....	1,662,173
1834.....	1,430,369	1841.....	20,832,875	1848.....	259,521
1835.....	2,384,678	1842.....	22,202,292	1849.....	542,334
1836.....	4,012,141	1843.....	13,824,285	1850.....	690,602
1837.....	7,010,983	1844.....	13,546,757		



**THE MARRIAGES, BIRTHS, AND DEATHS,  
REGISTERED IN THE DIVISIONS, COUNTIES, AND DISTRICTS OF ENGLAND,  
AS PUBLISHED BY AUTHORITY OF THE REGISTRAR-GENERAL.**

THIS Return comprises the Births and Deaths registered by 2,189 registrars in all the districts of England during the Spring quarter ending June 30th, 1851; and the Marriages in more than 12,000 churches or chapels, 2,869 registered places of worship unconnected with the Established Church, and 623 Superintendent Registrars' offices, in the quarter that ended March 31st, 1851. The return of marriages is not complete; but the defects are inconsiderable, and approximative numbers have been supplied from the records of previous years. The returns still show a great increase of Marriages and Births. The mortality is near the average.

**MARRIAGES.**—The Winter quarter, including the months of January, February, and March, has always fewer marriages in its records than any other quarter of the year. The marriages in the Winter quarter of 1851 were, however, 32,619; which is the largest number ever registered in the Winter season of any year; it exceeds by 8,172 (one-third) the marriages in the Winter quarter of 1841; by 4,190 the marriages in the Winter quarter of 1849, and by 2,194 the marriages in the Winter quarter of 1850. An increase in the marriages almost invariably accompanies a prosperous state of the country; and it is gratifying, in this sense, to see that the increase now extends over eight out of the eleven divisions. While the marriages in London have increased, a stationary or declining rate of marriage is remarked in the three divisions round London, comprising the parts of Surrey and Middlesex out of London, Hampshire, Berkshire, Hertfordshire, Oxfordshire, Northamptonshire, Cambridgeshire, Suffolk, and Norfolk. An increase in some of the towns of Kent and Sussex gives these counties a character which is exceptional in the South-eastern Division, but is quite in accordance with the results of the returns for the South-western Division, where the marriages were evidently on the increase, in Wiltshire, Dorsetshire, Devonshire, and Cornwall, and only slightly declined in Somersetshire. In Exeter, Plymouth, Tiverton, Barnstaple, Liskeard, Saint Austell, Redruth, and Penzance, marriages in unusual numbers were celebrated. The West Midland Division exhibits a considerable increase, particularly in the seats of the iron, coal, and earthenware manufactures—in Newcastle-under-Lyme, Wolstanton, Stoke-upon-Trent, Wolverhampton, Walsall, Dudley, Worcester, Kings Norton, Birmingham, Aston, as well as in Coventry, one of the seats of the silk trade. The marriages declined in Lincoln; in Leicester the two last winters show an increase; in Basford, Nottingham, and Derby, the increase was greater than in the other districts of the North Midland Division. In Cheshire and Lancashire the marriages increased most in Stockport, Macclesfield, Congleton, and Nantwich; Liverpool, West Derby, Ashton-under-Lyne, Oldham, and Blackburn. Huddersfield, Bradford, Leeds, Sheffield, and York were the chief contributors to the increase of marriages in Yorkshire; Durham, Sunderland, South Shields, Newcastle-upon-Tyne, and Kendal, to the increase in the Northern Counties. The marriages in Wales during the two last winters exceeded the marriages in the three winters preceding. Monmouth and Pontypool exhibit a decrease; Cardiff, Merthyr Tydfil and Swansea, Brecknock, Presteigne, Holywell, and Wrexham, a decided increase.

**BIRTHS.**—The number of births registered in the quarter ending June 30th amounted to 159,138; which is more than the births registered in any preceding quarter. It exceeds by nearly 30,000 the births registered in the corresponding quarter of 1841, when the number was 129,884. The births in the year 1851 already amount to 316,512. The increase is distributed over nearly all the divisions of England, but is greatest in London, in Yorkshire, and in the northern counties.

**INCREASE OF POPULATION.**—The census has been taken since the appearance of the previous number of the Quarterly Tables; and an unrevised statement of the population of each district is given in the present publication. The annual rate of increase from 1841 to 1851 is found to have been 1·212 per cent.; whereas it was 1·332 per cent. in the 10 years 1831-41. The Tables have all been consequently re-calculated, and the former rate has been substituted for the latter in estimating the population of each year. To a slight extent the rate of mortality has hitherto been understated in the Tables of the Quarterly Return; but the results for 1850, when the error is greatest, are only affected in the second decimal place.

The population of England and Wales was 15,914,148 on June 7th, 1841, and 17,922,768 on March 31st, 1851; and this implies such a rate of increase that the population, exclusive of persons in ships, must have been about—

17,977,000 in the middle of the year 1851.  
 15,930,000                   ,,                   1841.

And the increase in 10 years   2,047,000

The population of England and Wales, therefore, increased on an average 204,700 annually; 51,175 quarterly; 3,923 weekly; and 560 daily. Prior to 1850 the excess of registered births over deaths does not account for the whole of the increase; but in 1850 the births exceeded the deaths by 223,888; and in the June quarter of 1851 there is an equivalent excess: for the births of 159,158 children the deaths of 99,639 persons were registered, which leaves an excess of 59,499 persons in the population. The number of emigrants in the quarter from the ports of the United Kingdom at which there are Government emigration officers amounted to 115,568, of whom 28,696 sailed from ports of Ireland, 6,926 from Glasgow and Greenock, 3,473 from Plymouth, 10,451 from London, and 66,022 from Liverpool, making 79,946 from English ports. Many of the emigrants that sail from Liverpool are of Irish birth; and there has also hitherto been a regular immigration of the Irish population into England.

STATE OF THE PUBLIC HEALTH.—99,639 deaths were registered in the quarter ending June 30, 1851; the deaths in the corresponding quarter of 1850 were 93,005; and 102,143 in the corresponding quarter of 1849, when cholera was in the kingdom. The table below shows that the *annual rate* of mortality in the *Spring quarter* (April, May, June) was very uniform in the years 1841-46, or 2·141 per cent. on an average, 2·174 when highest (1841), and 2·077 when lowest (1844); in the Spring of 1847, after the potato failure, the mortality rose to 2·506, and remained 2·314, and 2·341 in the Springs of 1848 and 1849; in 1850 it fell to 2·106. In the Spring quarter of 1851 the mortality was at the rate of 2·228 per cent. per annum, which is lower than the mortality of the three bad seasons (1847-8-9), but higher considerably than the mortality in the corresponding quarter of the 7 years 1841-6 and 1850. Measles, scarlatina, small-pox, and whooping-cough were epidemic in many districts, and the chief causes of the high mortality.

Different epidemics prevail in different places at the same time, and the kinds of disease-matter are distributed over the face of the country like clouds over the sky: the outbreaks are partial, segregate, or universal; an epidemic arises and disappears in a village; at other times it radiates from a town; and at rare intervals infests the whole population. This law of the distribution of disease disclosed by the registration returns has a practical application. For if it is advantageous to know the places of the country which are generally salubrious, it is also useful to know at any particular time whether they are free from epidemics. Every disease of the zymotic class appears in almost every place at irregular intervals; and when people living in cities leave them, and visit watering-places or open healthy districts, they may arrive in the midst of an epidemic to which their families are thus unnecessarily exposed. The Quarterly Returns show generally what places are healthy, what are unhealthy, in each season, and with the local registers furnish the information that is required to avoid the dangers of temporary residence in districts either habitually or casually the seat of epidemic visitations.

*Marriages Registered in the Quarters ending March 31st, 1847-51; Births and Deaths Registered in the Quarters ending June 30th, 1847-51, in the Divisions, Counties, and Districts of England.*

Population.	Marriages.	Births.	Deaths.
	Registered in the Quarter ending the last Day of		
	March,	June,	June,
1841..... 15,914,148	1847..... 27,480	1847..... 139,072	1847..... 106,718
	1848..... 28,398	1848..... 149,760	1848..... 99,730
	1849..... 28,429	1849..... 153,693	1849..... 102,143
1851..... 17,922,768	1850..... 30,425	1850..... 155,727	1850..... 93,005
	1851..... 32,619	1851..... 159,138	1851..... 99,639



## MORTALITY OF THE METROPOLIS.

*A Table of the Mortality in the Metropolis, showing the Number of Deaths from all Causes, in the Quarters ending June of the Four Years, 1848-49-50-51.*

CAUSES OF DEATH.	Quarters ending June				CAUSES OF DEATH.	Quarters ending June			
	1848.	1849.	1850.	1851.		1848.	1849.	1850.	1851.
ALL CAUSES.....	12,945	13,008	11,238	13,093	III. Scrofula.....	100	112	77	115
SPECIFIED CAUSES.....	12,877	12,927	11,132	12,956	Tabes Mesenterica.....	199	196	173	190
I. Zymotic Diseases....	3,611	3,203	2,032	2,662	Phthisis or Consumption.....	1,699	1,708	1,548	1,815
SPORADIC DISEASES.					Hydrocephalus.....	405	383	320	464
II. Dropsy, Cancer, and other Diseases of uncertain or variable Seat.....	560	553	526	547	IV. Cephalitis.....	140	151	137	154
III. Tubercular Diseases..	2,403	2,399	2,118	2,584	Apoplexy.....	256	330	337	313
IV. Diseases of the Brain, Spinal Marrow, Nerves, and Senses	1,446	1,571	1,479	1,545	Paralysis.....	269	278	262	267
V. Diseases of the Heart and Blood-Vessels	365	487	472	508	Delirium Tremens..	35	33	41	32
VI. Diseases of the Lungs and of the other Organs of Respiration.....	1,672	1,922	1,726	2,117	Chorea.....	..	..	4	6
VII. Diseases of the Stomach, Liver, and other Organs of Digestion.....	728	783	710	797	Epilepsy.....	64	74	64	91
VIII. Diseases of the Kidneys, &c.....	149	136	130	156	Tetanus.....	5	7	6	9
IX. Childbirth, Diseases of the Uterus, &c.	112	101	122	105	Insanity.....	23	21	31	20
X. Rheumatism, Diseases of the Bones, Joints, &c.....	92	92	102	101	Convulsions.....	499	516	417	511
XI. Diseases of the Skin, Cellular Tissue, &c.	21	20	27	23	Disease of Brain, &c.	155	161	180	142
XII. Malformations.....	58	35	43	31	V. Pericarditis.....	21	34	26	32
XIII. Premature Birth & Debility.....	292	298	288	360	Aneurism.....	20	26	24	14
XIV. Atrophy.....	312	263	239	318	Disease of Heart....	324	427	422	462
XV. Age.....	498	465	484	540	VI. Laryngitis.....	61	44	60	52
XVI. Sudden*.....	133	172	180	105	Bronchitis.....	565	745	696	861
XVII. Violence, Privation, Cold, and Intemperance.....	425	427	454	457	Pleurisy.....	56	48	35	35
					Pneumonia.....	732	815	712	909
					Asthma.....	136	152	127	151
					Disease of Lungs, &c	122	118	96	109
					VII. Teething.....	120	131	119	173
					Quinsey.....	18	12	15	11
					Gastritis.....	14	27	22	30
					Enteritis.....	82	89	87	73
					Peritonitis.....	65	59	55	51
					Ascites.....	24	25	21	32
					Ulceration (of Intestines, &c.)..	34	27	22	23
					Hernia.....	40	37	41	36
					Ileus.....	24	37	36	42
					Intussusception.....	12	15	13	10
					Stricture of the Intestinal Canal..	2	11	9	10
					Dis. of Stomach, &c.	85	66	55	63
					Disease of Pancreas	3	1	..	1
					Hepatitis.....	39	39	60	49
					Jaundice.....	31	44	23	45
					Disease of Liver....	133	160	128	144
					Disease of Spleen ..	2	3	4	4
					VIII. Nephritis.....	5	2	2	11
					Nephria (or Bright's Disease) }	32	35	34	32
					Ischuria.....	3	2	2	3
					Diabetes.....	10	12	9	10
					Stone.....	9	5	7	9
					Cystitis.....	10	9	10	7
					Stricture of Urethra	21	10	5	7
					Dis. of Kidneys, &c.	59	61	61	77
					IX. Paramenia.....	3	1	3	3
					Ovarian Dropsy.....	8	6	15	9
					Childbirth, see Metria	63	59	59	52
					Dis. of Uterus, &c....	38	35	45	41
					X. Arthritis.....	..	1	3	4
					Rheumatism.....	55	46	54	56
					Disease of Joints, &c.	37	45	45	41
					XI. Carbuncle.....	6	5	5	3
					Phlegmon.....	5	8	12	6
					Disease of Skin, &c.	10	7	10	14
					XVII. Intemperance.....	12	13	23	16
					Privation.....	5	13	4	5
					Want of Breast Milk, see Privation & Atrophy }	32	42	32	52
					Neglect.....	2	4	..	..
					Cold, see Privation..	..	..	1	..
					Poison.....	35	27	25	19
					Burns and Scalds ..	41	52	63	48
					Hanging, &c.....	42	32	77	50
					Drowning.....	78	67	61	70
					Fractures and Contusions.....	138	139	131	159
					Wounds.....	30	26	18	31
					Other Violence.....	10	12	19	7
					Causes not specified	68	81	106	137
I. Small Pox.....	381	113	103	209					
Measles.....	306	368	232	495					
Scarlatina.....	816	497	234	169					
Whooping Cough.....	449	739	406	734					
Croup.....	80	91	82	67					
Thrush.....	49	35	23	22					
Diarrhœa.....	239	240	200	191					
Dysentery.....	41	41	25	34					
Cholera.....	17	268	9	3					
Influenza.....	50	16	36	108					
Purpura and Scurvy	12	14	13	11					
Ague.....	10	9	3	5					
Remittent Fever....	29	22	27	28					
Infantile Fever†....	7	5	10	11					
Typhus.....	882	512	426	428					
Metria, or Puerperal Fever, see Childbirth.....	60	57	51	30					
Rheumatic Fever, see Rheumatism	12	17	16	7					
Erysipelas.....	129	114	103	74					
Syphilis.....	31	43	28	31					
Noma or Canker, see Mortification	11	2	5	5					
Hydrophobia.....	..	..	..	..					
Hæmorrhage.....	45	44	46	49					
Dropsy.....	190	209	191	185					
Abscess.....	19	15	17	23					
Ulcer.....	8	16	8	8					
Fistula.....	7	6	8	4					
Mortification.....	52	42	25	51					
Cancer.....	224	197	219	206					
Gout.....	15	24	12	21					

\* Under the head of "sudden deaths," are classed not only deaths described as sudden, of which the cause has not been ascertained or stated; but also all deaths returned by the Coroner in vague terms, such as "found dead," "natural causes," &c., &c.

† In the years previous to 1848, "Worms" and "Infantile Fever" were classed together. The former, of very rare occurrence, is now placed to diseases of stomach, &c.

METEOROLOGICAL TABLE for the Quarter ending June 30, 1851.

NAMES OF THE PLACES.	Mean Pressure of Dry Air reduced to the level of the Sea.	Mean Tempera- ture of the Air.	Highest Reading of the Thermo- meter.	Lowest Reading of the Thermo- meter.	Mean daily Range of Temperature.	Mean monthly Range of Temp.	Range of Tempe- rature in the Quarter.	Mean Tempera- ture of Evaporation.	Point. ture of the Dew	WIND.		Mean Amount of Cloud.	RAIN.		Mean Weight of Vapour in a Cu- bic Foot of Air.	Mean additional weight required to saturate a cu- bic Foot of Air.	Mean Degree of Humidity.	Mean whole amt. of Water in a Vertical Column of Atmosphere.	Gr.	In.	Feet.
										Mean esti- mated Strength.	General Direction.		No. of days on which it fell.	Amount collected.							
Jersey .....	29.717	53.6	86.0	35.0	18.5-38.8	8.0	51.0	50.7	47.9	1.8	E.N.E. & W.N.W.	4.1	30	11.96	4.0	0.9	0.829	4.9	536	75	Height of Cistern of Baromet. above level of the Sea.
Guernsey.....	29.694	52.5	79.0	41.0	9.6-23.3	3.8	38.0	50.3	48.3	1.4	N.E. & N.W.	4.9	21	4.03	4.0	0.6	0.868	4.9	536	123	
Helston .....	29.707	52.7	79.0	34.0	15.8-34.7	45.0	45.0	49.7	46.5	1.6	N.E. & N.W.	4.9	33	3.95	3.8	0.9	0.813	4.3	536	106	
Falmouth .....	29.728	52.4	82.0	30.0	19.7-41.0	52.0	53.0	48.9	45.0	1.3	N.E. & N.W.	6.5	33	4.50	3.7	1.1	..	..	..	120	
Truro .....	29.789	52.7	82.0	29.0	14.5-37.3	39.0	49.3	48.9	45.0	0.6	N.E. & N.N.W.	5.5	34	5.80	3.7	1.2	0.773	4.4	538	55	
Torquay.....	29.789	53.4	75.0	36.0	13.6-29.7	39.0	49.3	45.3	45.3	2.3	S.E. & N.N.W.	3.8	37	4.49	3.7	1.2	0.760	4.4	536	160	
Exeter .....	29.691	53.4	80.0	30.0	18.9-38.5	50.0	48.9	44.8	44.8	1.9	E. & N.W.	6.4	28	4.79	3.6	1.2	0.756	4.4	537	140	
Midhurst .....	29.696	50.8	78.0	25.3	19.2-39.8	52.7	48.2	45.3	45.3	2.4	N.E. & S.W.	6.4	28	5.01	3.7	0.8	0.832	4.5	538	110	
Chichester .....	29.628	51.3	81.0	31.0	18.2-37.0	50.0	..	43.0	43.0	0.3	N.E. & S.W.	6.0	..	4.92	3.5	1.0	..	..	..	23	
Southampton .....	29.711	52.5	79.0	31.8	15.0-34.5	47.2	48.0	44.2	44.2	0.3	..	6.2	30	4.46	3.5	1.3	0.774	4.3	536	60	
Uckfield .....	29.700	52.2	84.4	28.5	22.7-48.5	61.5	48.2	43.3	43.3	2.4	W.S.W.	7.1	24	4.20	3.4	1.3	0.729	4.1	537	180	
Lewisham .....	29.708	51.5	87.0	28.3	19.4-42.1	60.1	48.0	44.0	44.0	0.6	N.E. & N.W.	7.1	36	4.39	3.5	1.2	0.755	4.2	537	82	
Royal Observatory, Greenwich	29.691	51.8	82.0	28.6	19.3-40.7	58.4	47.8	44.1	44.1	..	N.E. & N.N.W.	6.1	35	4.40	3.5	1.1	0.774	4.2	536	159	
Greenwich .....	29.691	51.8	82.2	28.7	16.5	..	53.5	49.1	46.5	..	N.E. & Var.	6.4	29	3.61	3.8	0.8	0.835	4.6	537	107	
Camberwell .....	29.678	52.9	85.0	31.0	14.0-37.3	54.0	50.4	47.7	47.7	3.2	N.W. & W.S.W.	6.4	43	3.63	4.0	0.8	0.841	4.9	537	32	
Chiswell Street Brewery .....	29.705	51.8	85.0	30.0	18.5-39.6	55.0	47.4	42.9	42.9	1.1	N.E. & N.W.	7.3	44	3.41	3.4	1.2	0.740	4.4	533	95	
St. John's Wood.....	29.682	51.9	87.0	25.5	20.2-42.5	61.5	48.9	45.8	45.8	2.3	E. & W.S.W.	6.0	40	3.94	3.7	0.9	0.806	4.4	534	270	
Rose Hill .....	29.678	50.8	84.3	26.7	19.4-43.2	57.6	47.3	43.4	43.4	1.0	N.N.W. & W.S.W.	6.0	54	..	3.5	1.0	0.786	4.2	535	230	
Thame .....	29.716	51.2	84.7	27.0	17.4-40.3	57.7	47.5	43.6	43.6	2.0	N.E. & S.W.	6.7	31	4.00	3.5	1.0	0.765	4.1	535	210	
Radcliffe Observatory .....	29.633	51.0	87.5	28.0	21.3-42.1	58.4	48.1	45.2	45.2	0.7	N.E. & S.W.	5.0	40	4.00	3.6	0.8	0.820	4.4	532	320	
Stone Observatory .....	29.675	51.9	87.0	28.0	20.8-41.3	57.0	48.3	45.2	45.2	0.8	N.N.E. & N.W.	5.1	49	4.21	3.7	0.8	0.821	4.5	533	290	
Hartwell House .....	29.645	51.1	85.8	28.0	21.6-44.3	61.5	47.1	44.2	44.2	..	N.N.E. & W.N.W.	6.1	44	4.53	3.4	1.2	0.795	4.4	533	250	
Hartwell Rectory .....	29.710	51.4	87.5	26.0	21.6-44.3	61.5	47.1	44.2	44.2	0.7	N. & W.N.W.	6.1	35	3.94	3.5	1.1	0.780	4.3	536	100	
Linslade .....	29.674	51.8	87.0	27.2	19.4-41.5	59.8	48.0	44.2	44.2	..	Var. & N.W.	6.2	35	3.94	3.5	1.1	0.759	4.5	536	100	
Cardington .....	29.666	51.7	90.0	27.0	21.0-45.0	63.0	47.6	43.5	43.5	1.6	N.N.E. & S.W.	7.3	36	6.24	3.7	0.7	0.826	4.5	539	39	
Norwich .....	29.673	50.4	84.0	28.0	17.4-39.7	56.0	48.1	45.6	45.6	1.1	N.N.E. & S.W.	6.7	34	7.44	3.4	0.9	0.795	4.1	536	175	
Leicester Museum .....	29.598	49.5	79.0	29.0	16.9-35.0	50.0	46.3	42.6	42.6	..	N.W. & S.	6.7	34	7.44	3.4	0.9	0.826	4.1	536	175	
Grantham .....	29.693	50.8	83.0	28.0	16.5-40.0	45.0	47.2	43.4	43.4	..	N.N.E. & W.S.W.	6.6	38	5.07	3.5	1.0	0.778	4.2	536	190	
Derby .....	29.680	50.6	82.0	29.0	..	40.7	53.0	47.3	43.8	..	Var. & N.N.W.	6.6	46	6.18	3.5	0.9	0.806	4.2	538	100	
Holkham .....	29.671	50.9	85.0	25.0	18.6-43.3	60.0	47.7	44.0	44.0	1.0	N.N.W. & W.S.W.	6.5	47	5.90	3.6	0.9	0.803	4.3	539	39	
Highfield House .....	29.643	51.0	85.3	27.5	22.6-45.4	57.8	47.5	43.9	43.9	0.4	Var. & N.W.	6.3	44	6.25	3.5	1.0	0.781	4.2	537	103	
Havarden .....	29.687	49.9	82.0	33.5	13.6-35.2	48.5	47.1	44.0	44.0	2.1	N.N.W. & W.S.W.	6.3	29	5.61	3.5	0.8	0.820	4.4	535	260	
Gainsborough .....	29.680	50.6	91.0	31.0	19.5-42.0	60.0	46.8	42.8	42.8	0.3	N.W. & W.S.W.	5.5	50	5.74	3.4	1.0	0.765	4.1	539	30	
Liverpool Observatory .....	29.689	51.7	81.5	37.5	10.6-29.1	44.0	48.4	45.0	45.0	1.1	N.W. & Var.	7.3	43	6.21	3.6	0.9	0.795	4.4	538	37	
Wakefield .....	29.694	50.8	87.0	30.0	18.9-44.3	57.0	46.4	41.8	41.8	2.6	N.N.E. & W.	6.5	46	6.21	3.2	1.2	0.786	3.9	537	115	
Stonyhurst .....	29.702	48.6	82.9	27.6	17.4-41.4	55.3	45.4	41.7	41.7	1.4	N.N.E. & W.S.W.	7.0	43	5.99	3.3	0.9	0.789	3.9	534	381	
York .....	29.685	50.1	80.0	30.0	16.1-38.3	50.0	45.9	41.5	41.5	2.5	N.E. & W.S.W.	..	31	5.99	3.3	1.1	0.748	3.9	539	50	
Whitehaven .....	29.628	49.8	83.5	31.0	11.7-24.9	52.5	47.6	45.5	45.5	..	N.N.E. & W.S.W.	7.0	43	8.34	3.3	0.9	0.789	3.9	539	90	
Durham .....	29.676	47.8	79.3	31.0	14.1-35.8	48.3	44.3	40.4	40.4	1.2	N.E. & W.	..	47	5.23	3.7	0.6	0.863	4.4	538	50	
Newcastle Lit. and Phil. Soc.	29.745	49.5	83.0	32.0	15.2-36.3	51.0	45.5	41.8	41.8	..	N.W. & S.S.W.	6.5	45	5.55	3.1	0.9	0.776	3.7	535	340	
Glasgow .....	29.643	49.5	81.1	33.8	14.9-35.3	47.3	45.6	41.3	41.3	..	N.E. & S.W.	..	46	7.93	3.2	1.1	0.786	3.7	538	190	
Dunino .....	29.612	50.3	85.0	32.0	19.8-41.7	53.0	45.8	40.9	40.9	2.0	N.E. & Var.	3.3	29	3.65	3.2	1.2	0.724	3.8	534	250	



## REVENUE.

*Abstract of the Net Produce of the Revenue of Great Britain in the Years and Quarters ending 10th October, 1850 and 1851; showing the Increase or Decrease thereof.—(Continued from page 285.)*

Sources of Revenue.	Years ending 10th October.			
	1850.	1851.	Increase.	Decrease.
	£	£	£	£
Customs.....	18,738,805	18,798,262	59,457	....
Excise .....	12,913,102	13,256,120	343,018	....
Stamps .....	6,145,780	5,965,785	....	179,995
Taxes.....	4,335,086	4,301,093	....	33,993
Property Tax .....	5,413,701	5,355,697	....	58,004
Post Office.....	820,000	970,000	150,000	....
Crown Lands.....	160,000	170,000	10,000	....
Miscellaneous .....	216,569	162,058	....	54,511
Total Ordinary Revenue ....	48,743,043	48,979,015	562,475	326,503
Imprest and other Moneys .	684,288	658,111	....	26,177
Repayments of Advances....	698,411	565,688	....	132,723
Total Income.....	50,125,742	50,202,814	562,475	485,403
Deduct Decrease .....			485,403	
Increase on the Year .....			77,072	

Sources of Revenue.	Quarters ending 10th October.			
	1850.	1851.	Increase.	Decrease.
	£	£	£	£
Customs .....	5,251,883	5,335,073	83,190	....
Excise .....	4,103,343	4,139,854	36,511	....
Stamps .....	1,507,028	1,432,564	....	74,464
Taxes.....	186,613	165,025	....	21,588
Property Tax.....	1,867,864	1,870,136	2,272	....
Post Office.....	227,000	306,000	79,000	....
Crown Lands.....	20,000	40,000	20,000	....
Miscellaneous .....	28,727	28,452	....	275
Total Ordinary Revenue ....	13,192,458	13,317,104	220,973	96,327
Imprest and other Moneys	121,615	124,330	2,715	....
Repayments of Advances ....	293,813	165,255	....	128,588
Total Income.....	13,607,886	13,606,689	223,688	224,885
Deduct Increase .....				223,688
Decrease on the Quarter .....				1,197

*Consolidated Fund Operations.*—The total income brought to this account in the quarter ending 10th October, 1851, was 13,641,297*l.* The total charge upon it was 8,333,242*l.*, leaving a surplus of 5,308,055*l.*

## CORN.

*Average Prices of Corn per Imperial Quarter in England and Wales, during each Week of the Third Quarter of 1851; together with the Average Prices for the whole Quarter.—(Continued from p. 286.)*

Returns received at the Corn Office, Board of Trade.		Wheat.		Barley.	Oats.	Rye.	Beans.	Peas.
		Weekly Average	Aggregate Average of Six Weeks' regulating Duty.	Weekly Average	Weekly Average	Weekly Average	Weekly Average	Weekly Average
Weeks ending, 1851.		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
July	5	43 5	40 10	25 2	22 5	27 6	31 8	28 10
	12	43 6	41 6	25 8	22 0	32 5	32 6	28 8
	19	42 7	42 0	25 6	21 11	28 2	31 5	28 6
	26	42 5	42 6	25 7	22 0	27 0	32 3	28 7
August	2	42 4	42 9	25 9	22 7	25 7	31 1	28 3
	9	42 3	42 9	25 11	21 7	28 5	31 4	28 1
	16	41 4	42 5	26 4	21 9	27 0	30 8	27 2
	23	39 10	41 9	26 8	20 11	27 1	31 2	25 11
September	30	39 1	41 3	25 10	20 8	26 9	30 7	26 6
	6	38 9	40 7	26 1	20 1	26 2	30 4	25 11
	13	38 5	39 11	26 1	19 5	25 0	28 9	27 8
	20	37 8	39 2	25 7	18 4	26 2	28 6	28 2
Average for the Quarter	27	36 7	38 5	25 0	18 0	25 4	28 8	27 0
		40 7	..	25 9	20 10	27 1	30 8	27 7

*Foreign and Colonial Wheat and Wheat-Flour imported in each of the Months ending 5th July, 5th August, and 5th September, 1851; the Quantities Entered for Home Consumption during the same Months; and the Quantities remaining in Warehouse at the close of them.—(Continued from p. 286.)*

[From the "London Gazette."]

## WHEAT.

Months ending.	Imported.			Quantities entered for Home Consumption.			In Bond at the Month's end.		
	Foreign.	Colonial.	Total.	Foreign.	Colonial.	Total.	Foreign.	Colonial.	Total.
1851.	qrs.	qrs.	qrs.	qrs.	qrs.	qrs.	qrs.	qrs.	qrs.
5th July	450,311	700	451,011	450,669	700	451,339	9,674	9	9,683
5th Aug.	478,146	2,280	480,426	478,713	2,280	480,993	9,107	9	9,116
5th Sept.	390,045	3,706	393,751	390,494	3,707	394,201	8,633	9	8,642

## WHEAT-FLOUR.

Months ending.	Imported.			Quantities entered for Home Consumption.			In Bond at the Month's end.		
	Foreign.	Colonial.	Total.	Foreign.	Colonial.	Total.	Foreign.	Colonial.	Total.
1851.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.
5th July	431,224	32,408	463,632	432,894	32,408	465,302	1,270	7	1,277
5th Aug.	378,879	91,542	473,421	378,906	94,542	473,448	1,244	6	1,250
5th Sept.	577,869	71,731	649,600	577,869	71,730	649,600	1,243	7	1,250





## CURRENCY.

## BANK OF ENGLAND.

*An Account, pursuant to the Act of the 7th and 8th Victoria, c. 32, for the Weeks ending on Saturday, the 12th July, the 9th August, and the 13th September, 1851.—(Continued from p. 288.)*

[From the "London Gazette."]

## ISSUE DEPARTMENT.

	Weeks ending		
	12th July, 1851.	9th August, 1851.	13th Sept., 1851.
	£	£	£
Notes issued .....	27,450,155	27,341,085	27,937,740
Government Debt .....	11,015,100	11,015,100	11,015,100
Other Securities .....	2,984,900	2,984,900	2,984,900
Gold Coin and Bullion .....	13,416,780	13,307,710	13,904,365
Silver Bullion .....	33,375	33,375	33,375
Total .....	27,450,155	27,341,085	27,937,740

## BANKING DEPARTMENT.

Proprietors' Capital .....	14,553,000	14,553,000	14,553,000
Rest .....	3,192,194	3,319,048	3,592,045
Public Deposits .....	4,319,348	5,513,244	8,757,770
Other Deposits .....	10,440,830	8,719,460	8,193,065
Seven-Day and other Bills ....	1,175,054	1,239,650	1,211,149
Total .....	33,680,426	33,344,402	36,307,029
Government Securities, including } Dead Weight Annuities .... }	13,464,021	13,464,021	13,464,216
Other Securities .....	12,389,725	12,078,245	13,137,245
Notes .....	7,259,180	7,189,700	8,826,835
Gold and Silver Coin .....	567,500	612,436	578,733
Total .....	33,680,426	33,344,402	36,307,029

## COUNTRY BANKS.

*Average Aggregate Amount of Promissory Notes of Country Banks, which have been in Circulation in the United Kingdom, distinguishing the several Banks, or Classes of Banks, by which issued in each part of the Kingdom, during the months ending 12th July, 9th August, and 6th September, 1851.—(Continued from p. 288.)*

Banks.	12th July, 1851.	9th August, 1851.	13th September, 1851.
England—Private Banks .....	3,437,290	3,347,235	3,219,152
Joint Stock Banks .....	2,731,015	2,652,640	2,569,929
Scotland—Chartered, Private, and } Joint Stock Banks .....	3,215,440	3,154,984	3,125,691
Ireland—Bank of Ireland, Private and } Joint Stock Banks .....	4,056,274	3,978,435	3,972,257
Total .....	13,440,019	13,133,294	12,887,029



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